

November 1976 30p

AIRFIX

magazine for plastic modellers

Inside: Farnborough air display, British dragoon uniforms, Maryland drummer and more 8th Army models



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magazine for plastic modellers

Editorial Director **Darryl Reach** Editor **Bruce Quarrie** Art Editor **Tim McPhee**
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On the cover

British army battlegroup training on the vast prairies of western Canada (see special feature inside). **Top left** Chieftain Mark V of 'Ajax' Squadron, 2 RTR, advances to the attack (*Bruce Quarrie*). **Top right** FV 432 armoured personnel carrier of 4th Company, 1st Battalion, the Irish Guards (*Terry Gander*). **Bottom left** An Abbot 105 mm SPG of 17 (Corunna) Battery, 26 Field Regiment, RA (*Terry Gander*). **Bottom right** Engine change for a Chieftain courtesy of a REME FV 434 (*Bruce Quarrie*). Of particular note are the cream/dark green colour schemes used on most of the AFVs at the Suffield training area, and the prominent call signs in white on black on each vehicle's sides.

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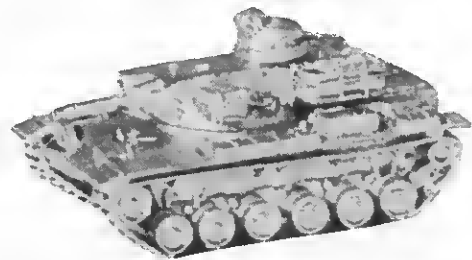
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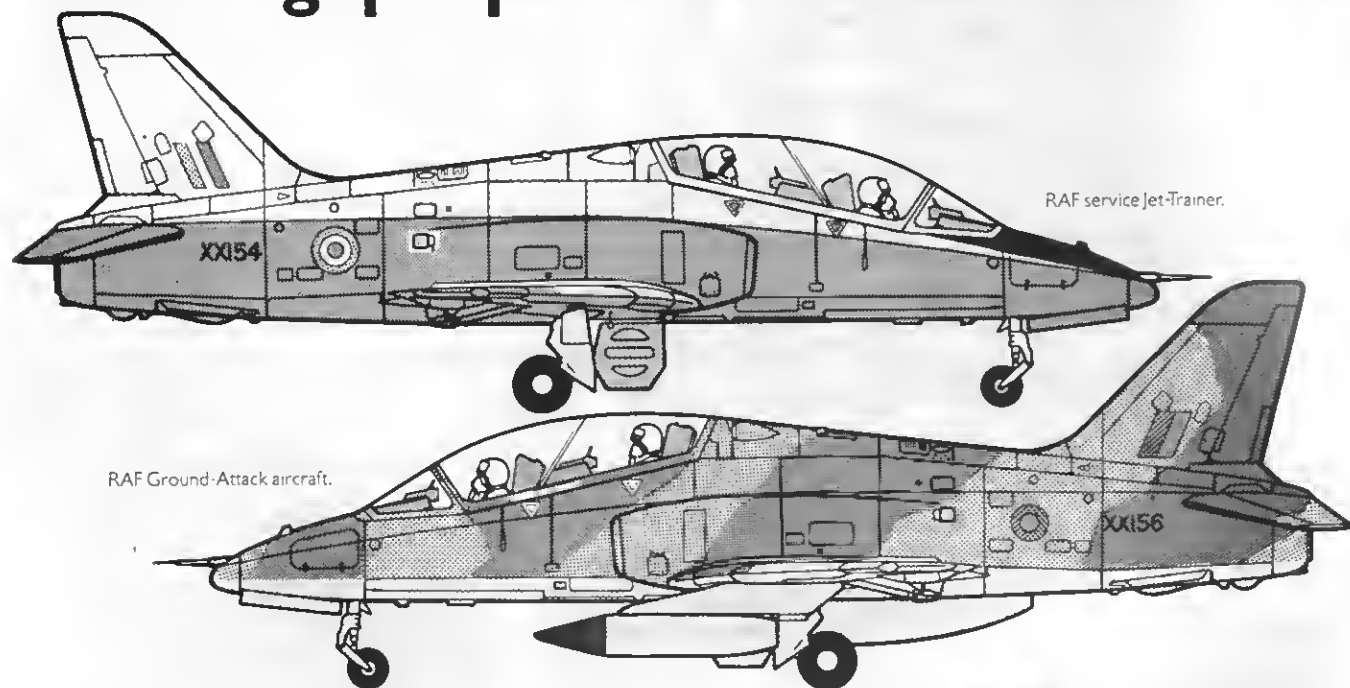
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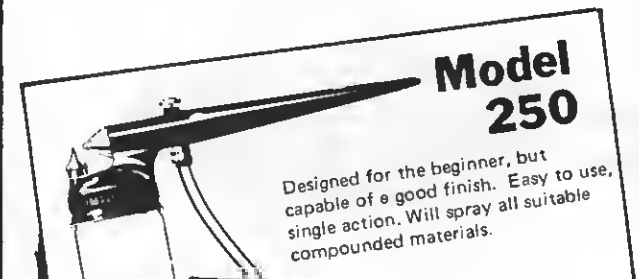
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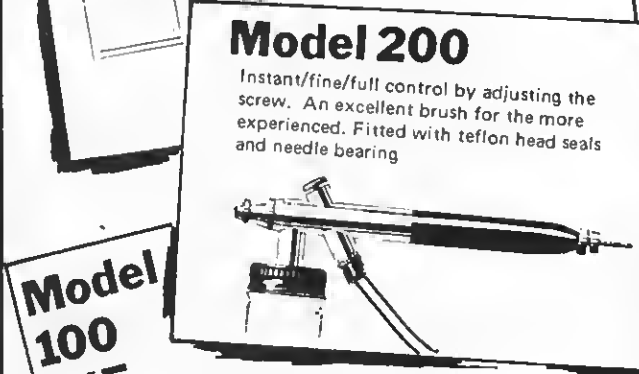
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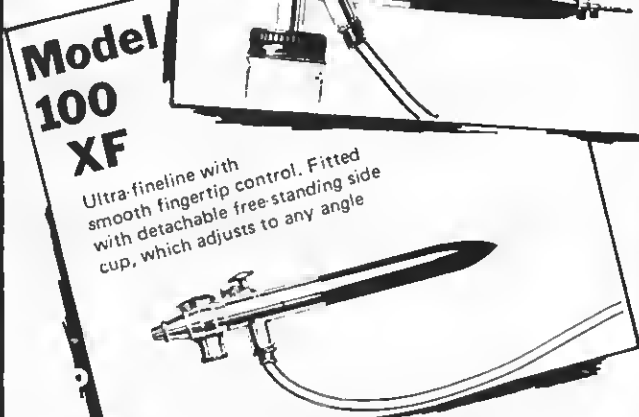
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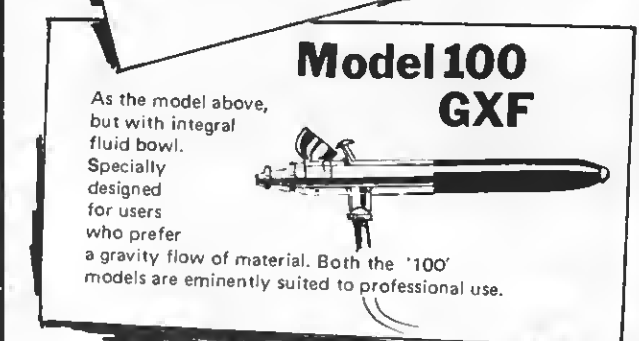
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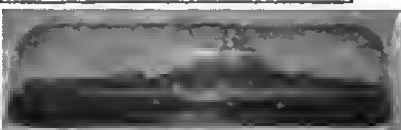
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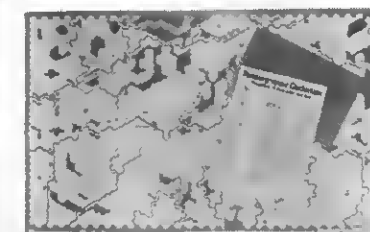
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radome, an also-rare Sea Vixen of RAE Bedford, and a Harvard FT375 from Boscombe Down, while new RAF hardware included a Harrier GR3 of 233 OCU fitted with the new laser nose, and a Jaguar in the markings of No 41 Squadron. FRADU sent a Canberra T22, whilst the Army provided six of their current types, including a camouflaged Chipmunk from Middle Wallop.

Notable overseas items comprised an

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Main interest was on two F-14A Tomcats, with one from VF-142 showing its power in the flying display, whilst a colourful machine from VF-143 sat in the static park. Also from the America came an E-2C Hawkeye of VAW-124, an A-7E Corsair II of VA-15, an A-6E Intruder of VA-176, and a Lockheed S-3A Viking of VS-28.

From Rota, Spain, came an EA-3B Skywarrior of VO-2, while other oldies included the traditional KC-97L, this year from the 136th Air Refuelling Wing, Texas Air National Guard, and a SP-2H Neptune of 320 Squadron, Dutch Navy.

The main feature of the static display was the superb line-up of 26 Hunters, staged to mark the 25th anniversary of the first flight of this famous aircraft. With Neville Duke's record-breaking Hunter WB188 as the centrepiece, the line included Hunters from FRADU, Yeovilton, the test establishments at Farnborough and Boscombe Down, No 4 FTS Valley, a Dutch civil-registered exam-

ple, and a T7 of No 237 OCU Honington. The main body of Hunters, however, came from the Tactical Weapons Unit, RAF Brawdy, with the markings of Nos 63, 79, and 234 Squadrons on view. It was pleasant to see that the nose markings of the recently disbanded Wittering Wing of Nos 45 and 58 Squadrons were still to be seen. These Hunters have now been transferred to the TWU, which will have some 80 aircraft on strength.

To list all the aircraft on show would take too much space, but other static highlights included a now-rare Meteor NF11 from RRE Pershore with a pointed nose

Top of page Rear view of F-14A Tomcat of VF-142. Squadron markings are yellow with black edging. Inner faces of air brakes red. Arrestor hook black and white. Note red Vs on inner sides of air intakes. Below The sole Mk 12 Hunter, XE531, is in use with the RAE at Farnborough in an attractive green and white colour scheme. Bottom F-14A Tomcat 159434 of VF-143. The three diagonal nose bands are medium blue, panels and arrow around national insignia are yellow, crew details below cockpit and on nose wheel door black, as is nose code '100'. Nose radome is rich cream (front) and white





Austrian Air Force Skyvan, a French Navy Alize, and the Norwegian Air Force sent an F-104G, a TF-104G, and an F-5B. The Canadian Armed Forces in Germany provided two Kiwas of No 444 Squadron, Lahr, and a T-33 from Baden/Söllingen. Other machines from the air arms of Denmark, France, West Germany, the Netherlands and the US were also to be seen.

The flying display extended over some seven and a half hours, with the morning mainly devoted to older types such as the Battle of Britain Flight and the FAA Historic Flight, together with noteworthy displays by the Lockspeiser LDA and the Trislander and rolls from the Defender.

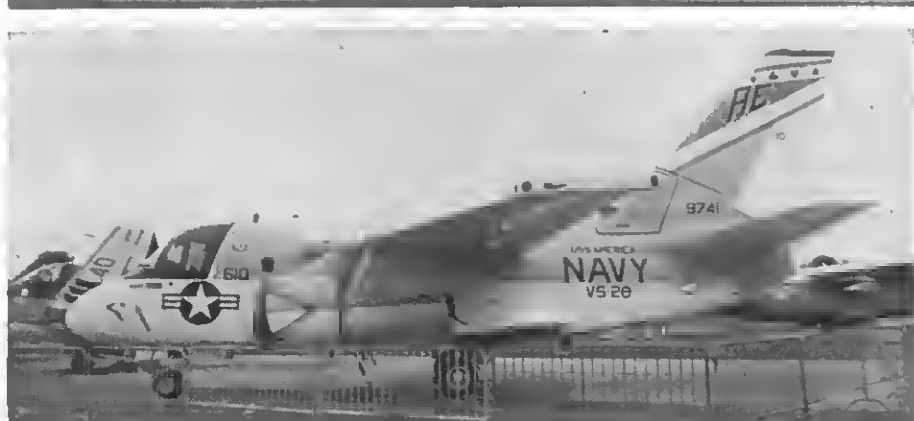
The afternoon was when the fast and noisy boys showed their paces, with an excellent display from a Norwegian F-5A, together with such types as the Lightning, Jaguar, Buccaneers, A-6, A-7, F-14, F-104G, Harrier, Etendard, Vulcan and F-111E. Four howling CF-104s of No 439 Squadron, CAF, made sure of their presence, whilst slower but no less interesting were helicopter displays from a West German Naval Sea King, a French Naval Super Frelon and a German Army CH-53G.

Aerobatic teams were out in force, with, of course, the Red Arrows, and the Patrouille De France, the Belgian Diablos Rouges, the Italian Frece Tricolori, the Blue Herons (four Hunters from FRADU), the Rothmans Pitts, and a new team to British skies, the Austrian Air Force Silver Birds flying four Saab 1050Es.

Altogether, a most memorable weekend.

Continued on page 132

Top of page New Jaguar XZ117 coded 'E' in the red markings of No 41 Squadron. **Top right** West German Naval Sea King 89+62 operated by MFG-5 in dark grey and orange dayglo. **Above right** VAW-124 sent this E-2C Hawkeye from the USS America. Basic grey and white, fin codes and tips dark blue, all other markings black. **Right** Lockheed S-3A Viking 159741 of VS-28 from the USS America. Standard grey and white overall. Fin tip red, other fin bands blue and white. Diamond and heart on top of fin red, club and spade black. Fin code 'AE' black with white shadow, all other codes and markings black. **Bottom right** Possible last appearance by a Neptune was made by this SP-2H of 320 Squadron, Royal Netherlands Naval Air Service, based at Valkenburg. Mainly dark grey, with white top and black radome and front of jet pods.



AIRFIX NEW MODELS FILE

NORTH AMERICAN F-86D SABRE

The North American F-86D Sabre Dog was the world's first single-seat, all-weather interceptor.

Evolved from the classic F-86 Sabre—America's first swept-wing jet—the F-86D was designed as a pure interceptor at a time when a major Soviet manned bomber attack on the North American continent was considered a distinct possibility.

The Sabre was unique in its day in that it had an all-rocket armament which consisted of 24 "Mighty Mouse" 2.75 inch Folding Fin Aircraft Rockets housed in a retractable ventral tray. The rockets had a range of 4,500yds and could be fired in groups or salvoed.

As well as being in widespread USAF service, foreign air forces began receiving Sabre Dogs in the late '50s, Denmark, Japan and Turkey all being recipients.

On July 16, 1953, an F-86D set a

new world air speed record of 715 m.p.h.

The Airfix F-86D Sabre contains nearly fifty parts and is an exact replica of the original.

Striking transfers are supplied to make it the shark mouthed interceptor of the U.S.A.F. 520th squadron, Washington or the 512th squadron based at Manston, England. Pilots name transfers are also included.

For up to date news and details of Airfix models get the Airfix magazine.



**North American F-86D Sabre.
72nd Scale Series 2.
New to the world's biggest range
of construction kits.**

| Technical Details | |
|-------------------|---|
| Date of origin: | 1949. |
| Engine: | 7,650lb-thrust General Electric J47-33 with afterburner. |
| Top Speed: | 693 m.p.h. |
| Service Ceiling: | 49,600ft. |
| Combat Radius: | 277 miles. |
| Wingspan: | 37.1ft. |
| Length: | 40.2ft. |
| Height: | 15ft. |
| Armament: | 24 "Mighty Mouse" 2.75 inch Folding Fin Aircraft rockets. |

THE DOG WITH A MIGHTY MOUSE UNDER ITS NOSE.





with, in addition to the many aircraft, a large number of other displays and exhibits on show. If any military aviation enthusiast did not find something to interest them at Greenham Common, well — they are beyond hope!

Peter F. Guiver

Lance missile

GUNNERS OF the RA have fired Lance, the Army's new tactical surface-to-surface guided missile, for the first time in the United Kingdom. A successful test firing was made at the Hebrides Ranges on July 7 when a missile with an inert warhead travelling at twice the speed of sound hit the intended target out in the Atlantic.

The Lance 75-mile missile system is made in the United States. It is replacing Honest John, also American, which for 15 years has been BAOR's main means of delivering tactical battlefield nuclear weapons. A free flight rocket, the Honest John lacks the range and accuracy we need in the 1980s. The 20 feet long Lance missile is fired from a self-propelled tracked amphibious launcher. A second vehicle with a loading crane carries the missile when on the move.

50 Missile Regiment, RA, in BAOR, which has been operating Honest John, is now re-equipping with Lance. Two types of

computer will be used with the new missile. The British FACE (Field Artillery Computer Equipment) which is the standard Royal Artillery kit for calculating survey and firing data, will be supplemented by the Lance monitor programmer. This checks serviceability and programmes the missile before firing in accordance with the output from FACE.

The missile system has been bought by several NATO members and individual support cost for each will be reduced by sharing the facilities of NATO's maintenance and supply agency.

HMS Orkney launched

HMS ORKNEY, the second of five 'Island' Class offshore patrol vessels for the Royal Navy, was launched on Tuesday June 29 1976, at the yard of the designer and builder, Messrs Hall Russell & Co Ltd of Aberdeen. The ceremony was performed by Lady Troup, wife of Vice Admiral Sir Anthony Troup, Flag Officer Scotland and Northern Ireland.

The 'Island' Class are 1,000-ton vessels, about 200 feet long and similar in design to the Department of Agriculture and Fisheries for Scotland's vessel *Jura*. Their tasks will include patrolling our offshore gas and oil installations, and fishery protection. They will be lightly armed, but fitted with comprehensive communications equipment to call up reinforcements if necessary. There will be accommodation for at least 40 personnel on board.

First of class, HMS *Jersey* is due to enter service later this year, and HMS *Orkney* should enter service early in 1977.

Paul E. Beaver

Lance missile. Top of page The missile minus fins on its tracked, amphibious launcher. Left Up, up and away... Below Launcher on the left, in the centre the crane with one missile in the carrier, with the warheads on the left (UKLF).



AIRFIX NEW MODELS FILE

GERMAN 'E' BOAT 1/72nd SCALE

When is an 'E' Boat not an 'E' Boat? When it's an 'S' Boat.

That was the German name which stood for 'Schnellboote' and meant 'fast attack boat'. And no wonder: the craft had triple diesel engines producing a speed of 35 knots.

The British called it an 'E' boat, an abbreviation for Enemy War Motorboat.

At the outbreak of war, 18 of the boats were in service and operations began in the Baltic against Polish shipping. North Sea Patrols started with a second Flotilla based at Heligoland.

In May 1940 with the Western offensive the boats attacked British shipping for the first time. With the capture of French ports, they had easy access to British convoy routes.

Minelaying operations as well as 'hit and run' attacks were carried out

by these powerful boats and night attacks proved to be most successful.

The Airfix 'E' boat is 17 1/4 inches long and captures perfectly the menacing lines of the boat. The kit contains nearly 300 pieces including torpedoes, depth charges, gunners, crew, right down to the German ensign.

You can make either a complete or waterline model with markings for the early series model.

For up to date news and details of Airfix models get the Airfix Magazine.



German 'E' boat.
72nd Scale Series 10.
New to the world's biggest range
of construction kits.

Technical Details

| | |
|-----------------|--|
| Date of origin: | 1933. |
| Engine: | 3-1,320 h.p. Daimler Benz 16 cylinder diesels. |
| Top Speed: | 35 knots. |
| Armaments: | 20mm. Bofors gun plus light machine guns. Four torpedoes. |
| Overall length: | 106ft. |
| Displacement: | 78 tons. |
| Crew: | 18 |
| Range: | 600 miles. |

THE FASTEST GUN BOAT IN THE WEST.



'Extras' for greater authenticity

John Sandars shows how the addition of a few simple accessories can add realism to your models



1:76 scale Daimler Mk I armoured car literally covered in 'extras': camouflage net and ammunition box on the rear, 'Tucans' and spade on the side, bedding rolls, tow chain, sand channel and pack on the front.

HAVING CONSIDERED the composition and equipment of 8th Army, and latterly the making of simple models of men and vehicles, I am going to conclude this somewhat protracted series of articles by describing how some of the external 'extras' can be made, to add authenticity to even the rudimentary type of models that we have described.

Any vehicle can be 'cluttered up' to some degree, but if you want to use lorries and trucks for wargames, and to actually be able to put figures or stores into them during a game, you will not want the back full of kit. No such problem occurs with AFVs. Even with tanks and armoured cars it is as well to have some idea of the types of article generally stowed externally so that they can be saved when converting other models or scrapping old ones, or made in quantity and used as required. Individuality

Items such as chairs, cooking pots, camp beds, etc. (but not generally in the desert bicycles, buckets or large oil drums) can be added to single display models, but for wargames ones, particularly if you are making a run of several at a time, some or all of the following simple extras will suffice to give an authentic look:

Crews' steel helmets: stowed on turret tops or hung from headlamps and brackets near crew positions; best cut from figure models which can have berets or stocking caps from modelling putty added in lieu.

Packs: again best cut from figures. Many service troops, guns' crew, etc. would not wear them in action so you may well have some in the spares box; hung on rear of tanks, stowed on top of sandshields and trackguards, or hung on side rails.

Bedding: usually strapped up in indi-

vidual rolls or canvas valises. A simple paper roll with painted straps will do, but a better result can be obtained by rolling a small sausage of Plasticine up in tissue and then tying cotton or twisting thin fusewire straps around it; this gives a less rigid appearance and is easier to bend when completed to fit contours of vehicle. Carried on engine deck or lashed to track and mudguards.

Aerials and pennons: a piece of plastic bristle from a housepainting brush with two paper pennons in red, yellow or blue; either triangular or swallowtailed for a squadron commander and square for an RHQ can be used, but on the wargame models these are easily damaged and are often better omitted.

Tarpaulins: most AFVs carried one, either bundled up on the back, or rolled and lashed to one of the side rails (tanks). Easily made from crumpled typing paper.

Camouflage nets: often in evidence on armoured cars and soft-skinned but not often on tanks. Can be made from piece of nylon stocking speckled with black, brown and yellow paint and draped around vehicle or tied into a bundle and stuck behind cab or hung on one side.

2-gallon tins: used for water and oil, can be made up in groups (as shown) or singly. These were standard issue so all vehicles had at least a couple, and water was issued in them, so many carried quite a few. Often carried in special racks under tailboards of lorries, on backs of tanks or on trackguards.

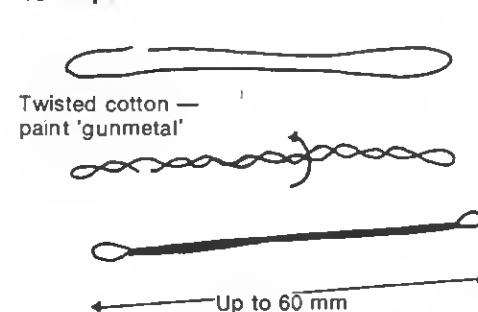
Tow ropes: already supplied moulded on to many tank kits, but if not twist cotton between slightly gluey fingers to give rope with an eye at each end; can be coiled up or laid down one side of vehicle with one end glued to position where front or rear towing shackles would be.

Spades: again often moulded on to kits, but can be made from card and thin plastic rod or pins. It is often easier to stick the parts direct to the vehicle rather than trying to stick the handle on to the shaft, etc. first.

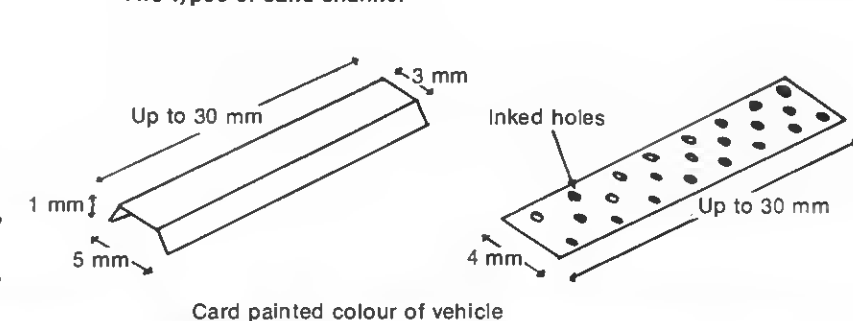
Ration boxes: unpainted blocks of wood with Indian Ink securing bands drawn around them. Rub between dirty fingers to remove new look.

Ammunition boxes: khaki or stone painted wooden blocks; handles, clips, etc. can be drawn in with a mapping pen if desired. Old boxes of all sorts were used for extra stowage and were lashed in odd corners.

Tow rope



Two types of sand channel



Sand channels: wheeled vehicles often carried these either secured across the front or on one side of the body. Can be made from card as shown.

Jerricans: from kits or sets of accessories, but these should be used sparingly as they were not British issue till late in the campaign, and even at the end much petrol was still being supplied in disposable 4-gallon tins. Vehicles except Shermans and Jeeps would not usually have special stowages for them. Some would be dark sand (petrol) and others black with a vertical white cross on the sides (water).

Photos throughout the series, and those accompanying this article, will give you some ideas on stowage, as will of course pictures of the real thing in books and magazines. Remember that in action tanks were not all that heavily draped in loose kit, although they might be when 'moving house' in the rear areas. In battle what kit was carried externally had to be carried where it would not fall off, obstruct the use of weapons or impede access and vision from hatches, etc.

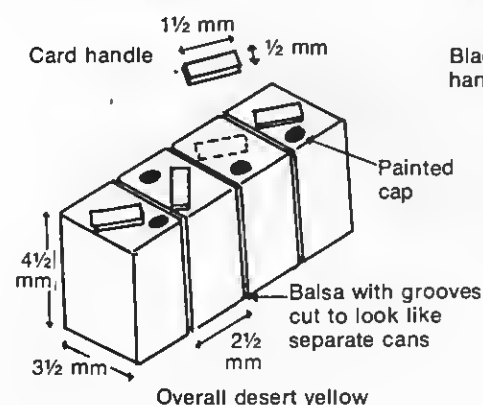
It has only been possible to describe the making of a few vehicles in this series, but the principles of construction used can, of course, be employed on many others of all nationalities and campaigns, while external kit can also be added within the limits of the climate and period of the war, where again you can be guided by photos of real vehicles. In any event I hope that the organisational details given in the earlier articles, and the modelling techniques in the later ones will prove of use. If you missed any articles, or prefer to have all the information together in one handy volume, my latest book — *Airfix Magazine Guide 20: 8th Army in the Desert*, will be published in November, price £1.40.



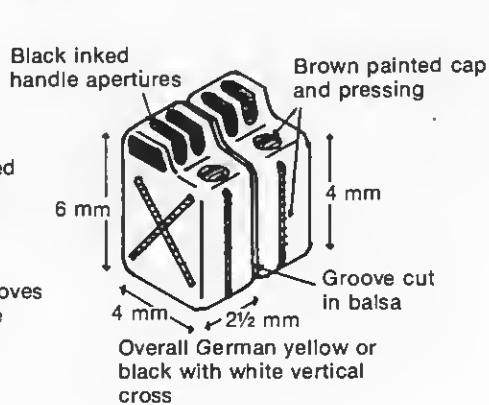
Above Chevrolet portee for 6 pdr covered with netting, ammo boxes, bedding and packs. Below Sherman with helmet and pack on turret, side rail with camouflage net, spare track links, bedding, boxes and water jerrican.



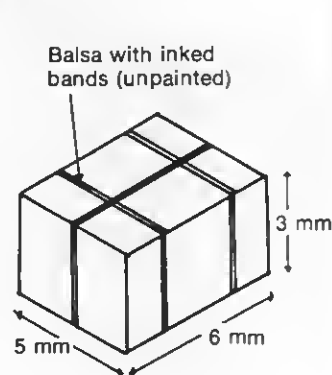
Group of 'Tucans'



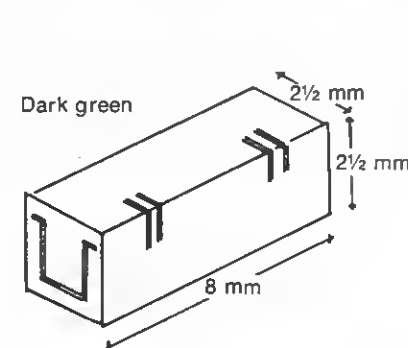
Jerricans



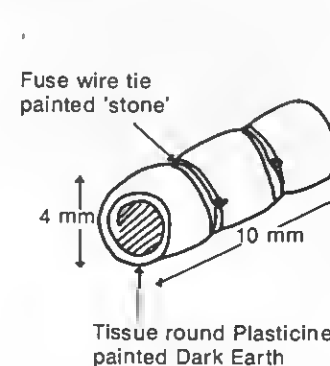
Ration box



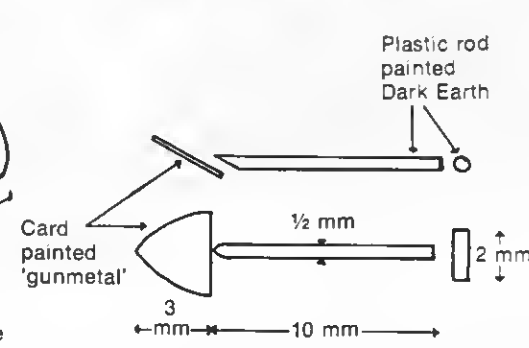
Ammunition box



Bedroll



Spade



Michael J. F. Bowyer

Army-air colours 1937-45

Part 14 — By Horsa to Normandy

AS SOON AS the Horsa entered service worries began to be expressed concerning the means of rapid exit from the glider during an airborne landing. The Sicilian venture showed that the American CG-4 with its upswinging nose allowed a faster rate of exit than was possible from the Horsa with its side-loading door. If, however, the nose of a glider was seriously damaged a catastrophic situation would develop, so a swinging nose might not be the best idea after all.

At the start of November 1942 the War Office had requested an investigation into the practicability of fitting a swinging rear fuselage to the Horsa, at a time when a 50 per cent cut in Horsa production was being discussed, which came as a mighty shock to the Army. A few weeks later the War Office asked for a prototype of a Horsa with a swinging tail to be built. Early in January 1943 the Ministry of Aircraft Production replied that the difficulties with such a modification were too great to allow it to

proceed. Instead, it was decided to build a Horsa prototype which would have a swinging nose to allow the fast exit of vehicles, as well as troops who could also deplane from the aft door. The Army was not happy with the idea of a swinging nose, but something had to be done to improve the glider.

An outline for an entirely new troop and vehicle glider was drawn up in June 1943, but already MAP had ordered Airspeed to proceed with the design of a swinging-nosed Horsa. Arguing then that a new glider was not feasible the War Office agreed to the swing nose version and at the same time asked for special loading ramps to be installed in the new variant, although these integral troughs were placed secondary to the other loading requirement. To permit the required modifications to be applied on the maker's line the production span of the Horsa had to be lengthened which opened the way for further orders. On August 13 1943 the War Office was informed by MAP that a prototype Horsa

with a hinged nose, lowered fuselage troughs and nose towing was being prepared.

By November 1943 the Army was expressing an urgent, desperate need for the swing-nose Horsa for the forthcoming invasion of Europe. Design and development work was, however, proving very difficult for it required extensive re-tooling as well as re-design. It was estimated that production of the new variant, the Horsa Mk II, would yield five gliders in May 1944, ten in June and 15 in July, after which only gradually would the numbers swell.

Clearly, unloading from the side of gliders would jeopardise any large scale operation. Yet nose unloading could not be introduced as a retrospective modification. Something else had to be done and it was therefore decided to make a quick appraisal of the possibility of rear unloading. The relative simplicity of such a scheme took many by surprise. All that was required was the fitting to each longeron at the break point of a quick release attachment, including rapid release nuts and bolts. Trials showed that the tail could be cast aside in two or three minutes, but this meant that there would be a drop of some three feet to ground level from the main body of the glider. Simple ramps were therefore devised, hinged at one end and attached to the fuselage floor and stowed vertically when not in use.

Within a matter of days this hasty scheme met with full approval, at a time when another 500 Horsas were ordered to boost production to 140 per month. It had been intended to bring Horsa production to a halt in October 1944, but further orders resulted in production ending in April 1945.

In November 1943 637 Horsas were in storage on 20 bomber airfields and others were with other units. A bottleneck concerning seats meant that two thirds of the assembly needed them. By December 31 1943 1,327 Horsas had been delivered and were awaiting assembly or were already complete.

An experiment whereby a Cordtex belt surrounded the joint between the main centre section and rear fuselage, and which could be exploded to rapidly detach the tail, was tried. Small arms fire might prematurely fire the cordite and the idea was abandoned. Instead it was decided to hold to the detachable rear fuselage scheme, and production of the necessary parts was put in hand so that 400 gliders could be modified during each of the three months February, March and April. A further 15 had already been modified in January 1944. The modification rate built up to about 150 weekly, 1,200 sets of parts for Modification 306 being initially ordered. So successful was the idea that at one time it was even proposed that the forthcoming Mk II should incorporate the detachable tail to counteract any nose damage on landing.

Continued on page 138

Below Airborne troops aboard a Horsa during an exercise. The photograph is taken looking aft with some troops on the cross-fuselage bench at the rear of the cabin (IWM). Bottom A Horsa Mk I being towed off from Harwell in the summer of 1944. On the airfield are V8-coded Stirlings and Albemarle of 570 Squadron. The ARAF stripes are only on the fuselage under surfaces of the Stirlings (IWM).

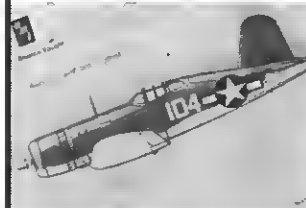


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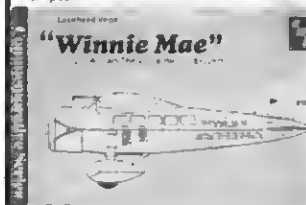
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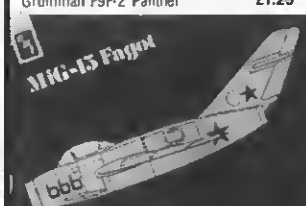
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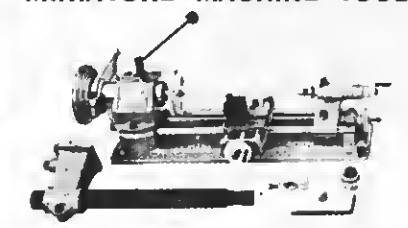
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French Hussar 1815
American in Hunting Shirt 1776
Coldstream Grenadier 1776
Queens Grey Officer 1680
Scots Guard (N. Ireland) 1975
3rd New Jersey Regt. Private (Jersey Blues) 1777
£6.30 each

BMW MODELS, 327/329 HAYDONS ROAD, WIMBLEDON, LONDON SW19 TELEX 928374 01-540 7333/4



Above Part of the huge number of Horsas which passed through Netheravon in the hands of No 1 Heavy Glider Maintenance Unit, the main organisation for the overhaul and general control of these gliders (IWM). **Below** DP728, a Horsa 1, on tow. Note the bifurcated tow rope attached beneath the mainplane. Initially delivered to 9 MU June 6 1942, the aircraft passed to 5 MU then was used for research purposes at AFEE Sherburn-in-Elmet, Yorkshire, October 26 1942 to July 5 1943. It was written off on September 17 1944 during the Arnhem operation (IWM).



By mid-January 1944 Horsas were placed in three categories. The 'Red Horsa' had a detachable tail, 'White Horsa' had merely the side door and the 'Blue Horsa' was the planned variant with a swinging nose. Modification 307 covered the use of loading troughs as rear fuselage ramps.

For the forthcoming assault on Normandy the Horsa Mk 1 was able to carry an assortment of loads in addition to the usual one of 25 troops and two soldier pilots. These loads variously comprised a 6 pdr anti-tank gun, 20 mm Hispano or Plostom gun, 40 mm Bofors, 5 cwt car, 75 mm US pack howitzer, 10 cwt trailer or Sigmund trailer, heavyweight motor cycle or 350 cc or 125 cc motor cycle, folding bicycle, handcart, 350 cc motor cycle combination, Summerfelt runway tracking or components for a Bailey bridge, and the normal operating all-up weight was set at 36,000 lb.

It was appreciated that following any airborne landing many gliders would be write-offs, but by combining serviceable parts in a captured landing area some might be retrieved. Flying them out could cause problems and in May 1944 tests were carried out at Netheravon whereby the glider's tow rope could be positioned between two posts. A C-47 Dakota fitted with a long hook then snatched the suspended tow rope, a drum taking up the sudden immense strain until the rope tension was sufficient for the glider to be safely towed aloft. In the event only 40 Horsas were flown out from Normandy, and by conventional towing methods. None appear to have been used again operationally.

A census on June 1 showed that 1,727 Horsas were available for operational use, so that plans to back the Normandy landings with Hotspur gliders were set aside. There were insufficient tugs even for the Horsas in two lifts, let alone amplification of the glider force.

As soon as Normandy had been selected as the region where the invasion of Europe would commence the area came under

intensive study, both for selection of vital targets to be seized and for suitable landing zones (LZs) for the glider force. Eventually it was decided to mount two operations. Prior to these, the seats, control surfaces and belly skids needed to be fitted to the dispersed Horsas by personnel of No 3 (Bomber) Group and No 2 Heavy Glider MU. In March 1944 tugs began to retrieve the Horsas from their bomber bases, and a daily sight over eastern England were the Horsas being towed to their operation bases, usually by Albemarle.

Operation Tonga was planned for the first night of the invasion, eventually mounted on June 5/6 1944. At 0020 hours six Horsas towed by Halifaxes were released high towards LZ 'N'. Troops in the gliders were ordered to seize one or two bridges crossing the Orne canal, for which purpose the gliders landed at Benneville and Ranville close to the two mined bridges. Secrecy and speed were essential for success, so that the six Horsas towed off from Tarrant Rushton had their wheels specially greased to silence them on landing. Doors were opened in the gliders before touchdown and barely applied. As soon as they had released their gliders the Halifax crews each dropped 6 x 500 lb bombs on a powder factory providing some diversionary cover to the landings. Each glider bore a chalked identity number applied mainly for marshalling purposes, but useful for identity after landing. Nos 91-96 were applied to the Horsas in this opening assault.

Phase II of the operation included the release on LZ 'K' of six Horsas (nos 218-223) towed by Dakotas from Blakehill Farm and landed at 0045-50. Another 11 were also towed by Dakotas of 46 Group, Nos 66-69 from Harwell and 261-267 from Down Ampney, to LZ 'V'. These two forces were sent to establish landing strips and lay out special identity markings for use in the second operation mounted on the evening of D-Day. At each LZ six ground strips 15 x

3 feet were laid down, smoke candles and Fane lights being set up to guide the gliders safely in.

Phase III called for three Horsas towed from Brize Norton to land by a coastal battery in order to silence its fire. At 0320 hours 68 Horsas landed at LZ 'N' which had been hastily prepared by paratroops of the 5th Parachute Brigade. This force comprised gliders Nos 27-45 from Brize Norton, 91-111 and 112-126 from Tarrant Rushton and 70-90 from Harwell. The chalked numbers were usually on the nose, and were useful in aiding the identity of gliders carrying varying loads since no unit lettering was ever carried.

During June 6 three LZs were prepared for the main landing, LZ 'N' 6½ miles north east of Caen on the bank of the Orne, LZ 'K' 5½ miles east of Caen/two miles east of Troarn, and LZ 'W' 9½ miles north east/four miles east of Cabourg.

In the evening of June 6 Operation Mallard took place. Some 220 Horsas towed by Albemarle, Stirlings and Dakotas set off carrying the 6th Air Landing Brigade for the cleared strips at LZ 'N' and LZ 'W' whereon the landings took place around 21.00 hours. The force rendezvoused at 2,500 feet and released its gliders at 1,000 feet, the long train of gliders being covered and escorted by 15 squadrons of RAF fighters. The composition of this force was as follows: Broadwell — 37 Horsas to LZ 'N', Nos 1-37; Down Ampney — 37 Horsas to LZ 'N', Nos

A landing zone in Normandy after D-Day with LF912 in the foreground. Austin-built, this Horsa was stored at Marham and took part in Operation Mallard. Behind is glider 'No 3' which, like all the others, has its tail off for quick exit. All the Horsas appear to have full ARAF wing and fuselage black and white stripes (IWM).



38-74; Brize Norton — 38 Horsas to LZ 'N', Nos 75-112; Harwell — 39 Horsas to LZ 'W', Nos 113-151; Keevil — 34 Horsas to LZ 'W', Nos 152-185; Fairford — 35 Horsas to LZ 'W', Nos 186-220. Additionally, Hamilcars operated from Tarrant Rushton.

The identity of all the gliders is not known, but those written off in action as a result of the landings are as follows:

Operation Tonga, night of June 5/6 1944

LF918.
LG916, 917.
LH133, 175, 179, 189, 224, 234, 236, 243, 269, 271, 273, 276, 301, 321, 324, 329, 379, 431, 434, 466, 469, 475, 494, 495, 507, 513, 515, 518, 521.
LJ264, 267, 310, 311, 326.
PF768, 791, 793, 800.
PW706, 709, 716, 721, 732, 735, 758.

Most of the 40 retrieved Horsas were probably from Operation Tonga.

Operation Mallard, June 6 1944

DP416, 427, 438, 519, 539, 601, 628, 695, 704, 706, 744, 770, 811, 828.
HG746, 858, 868, 912, 968, 971, 977.
HS111, 126.
LF906, 909, 912, 916, 953, 957.
LG675, 679, 694, 715, 716, 725, 736, 747, 774, 787, 790, 831, 849, 853, 868, 870, 879, 880, 883, 915, 939, 948, 951, 985, 986, 992, 995.
LH120, 132, 145, 146, 170, 173, 185, 203, 206, 213, 217, 230, 239, 242, 264, 281, 295, 316, 317, 328, 336, 339, 344, 349, 353, 373, 375, 378, 380, 381, 388, 402, 405, 406, 410, 429, 432, 435, 437, 442, 444, 451, 453, 457, 465, 470, 491, 492, 499, 500, 508, 516, 519, 525, 528, 532, 533, 534, 553, 554, 566, 567, 568, 570, 571, 572, 575, 578, 579, 580, 582, 600, 601, 942, 943, 966.
LJ111, 116, 124, 187, 266, 270, 285, 314.
PF690, 693, 694, 695, 700, 703, 705, 707, 709, 710, 715, 716, 720, 722, 723, 724, 725, 744, 758, 760, 769, 787, 790, 803, 810, 816.
PW637, 646, 647, 649, 652, 653, 658, 659, 662, 663, 664, 665, 666, 671, 675, 676, 695, 705, 712, 713, 714, 717, 720, 722, 726, 733, 734, 748, 759, 760, 761, 770, 773, 774, 783, 785, 786, 819, 828, 847, 871, 879, 884, 889, 897.

Maryland drummer, 1814

Unusual figure conversion from Martin Windrow and Gerry Embleton

THIS MAKES a colourful subject, and an unusual addition to a collection of figures of the Napoleonic period. In 1812-14 the Peninsular War was drawing to its climax, and it is inevitable that most enthusiasts should associate this period with Wellington's superb Peninsular Field Army and their opponents. It should be remembered, however, that while this famous series of campaigns was occupying most of the British Army, another expedition was busy knocking seven bells of Hell out of the United States and burning down the White House! This model depicts a drummer — always popular — of a militia unit involved in the successful defence of Baltimore against a British column, September 12-14 1814. It involves some quite demanding work, marrying up parts of kits which do not normally fit together, and providing various scratch-built accessories; but the result is most attractive. Basic materials are the French Imperial Guard Grenadier and 95th Rifleman kits.

Take the front torso of the Grenadier and trim off the lower part of the vest just above the pockets. Saw upwards and inwards diagonally, just inside the line of the edge of the cutaway coat on each side, to remove this section without destroying the coat on each side. File a new bottom line to the lapels, diagonally upwards and outwards, the inner end of the line being at the point where the new horizontal line of the vest meets the coat on each side. Trim off the lapel points at the top, from just outside the button, filing them down to make a smooth curved outer edge continuing the sweep of the lower part (see sketch). The moulded collar must be filed much thinner all round, and reduced in height by about a third; it is to become a stock, and a new collar will be added outside it.

Take the 95th Rifleman's rear torso, and either remove altogether or severely reduce the collar. Fitting the new collar will probably be easier without it, but bonding the head will be easier if at least a filed-thin rim remains at the bottom. You now have to marry up the front of the Grenadier with the rear of the Rifleman. There is no helpful way to describe the steps necessary; it's a case of trial and error. Identify any projections on the edges which prevent a reasonably good join, and file them down. Cement the parts together, not worrying about gaps at various points; and when dry, simply fill and paint with 'soup' (melted sprue — see the authors' new book *Airfix Magazine Guide 19: Model Soldiers* for a description of this technique), file smooth, and so forth, until you have achieved a good hidden joinline all the way round. Set the Rifleman's head in the collar, and put aside to dry.

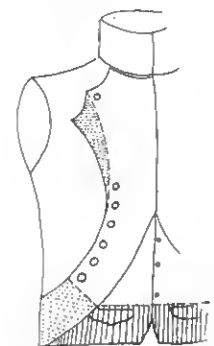
Take the Grenadier's legs (for preference — the stance works well — but Rifleman's standing legs are also possible) and carve and file away the turnups. The trousers

should finish up with the conventional Napoleonic cut, plain bottoms with a little cut-out at the bottom of each outer seam. Carve and file away all gaiter detail, and work for the effect of socks and ordinary low, laced shoes. Join the legs, and carry out any necessary major filling between them. File the top of the pelvis flat, and add packing to the top to a height of about 3 mm; this will be necessary to make up for the portion of waistcoat lost earlier. We used a rough oval of scrap plastic carved to shape and thickness and firmly cemented to the top of the pelvis. When set, we filed and carved until we had a good, if rough, continuity of surface round the visible front half; this was then built up smoothly with 'soup', and we finally had a mammoth filing session to fair it into the lower pelvis and continue the necessary creases from thigh to thigh, and up across the stomach. When the new centre-section was complete and dry, we cemented torso to pelvis.

Next, when the model could be handled again, we added a new cutaway collar to the coat, from thin plastic card. It should be about 3 mm tall, extending to just below the earlobes, and rather higher than the new stock at the front. There should be a gap of 4 mm horizontally between the top

Front view of the completed figure.





Rough sketch of modifications to front torso of Imperial Guard Grenadier for Maryland drummer conversion. Scored area to be removed, dotted areas to be filled down to level of coat surface.

front corners. A tiny frill of scored card added vertically below the stock in the centreline of the coat added to the illusion of reality.

Now we turned to the shako. This can be built from a cylinder of plastic card with putty turban and filling; carved from scrap plastic; or improvised by any combination of these materials. It is not tapered inwards, like the British shako, or outwards, like the French, but is a true cylinder — in side elevation, that is. In section it is slightly egg-shaped, following the shape of the head. Dimensions are 7 mm tall, from headband to top; 6 mm from front to back across the top; and 5 mm from side to side. The Rifleman's peak was used as a basis for our shako, which we built up using a plastic card former and putty. The turban around the lower half is easily added from putty; but make sure the inside is likewise filled with putty, or the card cylinder may collapse when you add the turban. The Rifleman's cockade was cemented to the left side, and behind it an ostrich feather plume. This could be made from plastic card cut Christmas-tree fashion; but we had more authentic materials to hand — in the form of a tiny feather from some obscure part of a sparrow's anatomy, spotted on the site of a successful feline ambush! Cut down, it looks just right.

The arms are, as usual, a matter of what animation you want and what the spares box has to offer. Hands which are in the wrong position, or badly moulded, can always be cut off and replaced, at a different angle if necessary, from the spares stock. When the arms are set and any filling and filing has been completed, add a broad crossbelt from plastic card, hanging over the right shoulder and down to the outside of the left thigh. We then added a Historex drum to the crossbelt, with hanging slings from plastic card; and a pair of drumsticks, from the same source, to the right hand. The Grenadier's epaulettes went on the shoulders, scored and slit to give a more realistically splayed effect, and with the incorrect button scraped off the outer ends.

The painting is not complicated, but gives a pleasing effect. Shako and peak are black, with a red turban, black cockade, and red plume. The coat is red, with white turnbacks. The collar, cuffs and lapels are pale blue, the buttons silver, and the epaulettes white. Vest and trousers are white, socks grey or brown, and shoes black. The drum can be either natural varnished wood, or brass, with white hoops, cords, slings and bandolier. There may or may not have been buttons round the top of the cuffs — the source is an interruption by Knötel of a naïf contemporary painting, and such details are not given. □

FARNBOROUGH 1976

Special report from Peter F. Guiver

WHILE MOST people were longing for rain, aviation enthusiasts hoped that the long hot summer of 1976 would continue for just long enough to prevent this year's Farnborough Air Show from being swamped as in 1974, and indeed the weather was fine for the first part of this year's event.

This was the second fully international display to be staged at Farnborough, and whilst many may wistfully recall the days when the rule was 'British products only', there can be no denying the fact that the show would have been pretty thin without overseas participation. Also, this new format enables the public to see several types that would otherwise have been just names on paper.

The impending nationalisation of major parts of the British aerospace industry has for long been a matter of debate, but despite future doubts and uncertainties, aviation exports are running at a record level of some £900 million per year. Only time will tell as to the impact of the proposed reorganisation.

At this year's show the emphasis seems to have been on short airfield performance, weapons carrying capabilities, high manoeuvrability, and even ugliness, and some of the machines on show seemed to combine all these virtues!

In the field of high performance military aircraft, the United States dominated the show. From Grumman came the F-14A Tomcat and the E-2C Hawkeye, but sadly from the modeller's point of view these were new machines and thus lacked the

usually colourful US Navy unit markings. The F-14 is currently being produced at the rate of six per month, and over 200 have been delivered so far. The US Navy plan to deploy 18 squadrons of Tomcats, and of these ten are now either operational or under training. Future developments include evaluation by Japan, Saudi Arabia and other countries, the proposed F-14B which will be powered by a new engine, and possible use by the USAF Air Defence Command as a replacement for the ageing F-106 Delta Dart. Almost 20 Tomcats have been delivered to Iran against an order for 80 aircraft.

In contrast to the Tomcat, its USAF counterpart, the McDonnell Douglas TF-15 Eagle, was resplendent at Farnborough in a superb colour scheme to commemorate US Bicentennial Year. This air superiority fighter is being built at the rate of eight to nine machines a month, and one in seven of these is a TF-15 two-seater. The USAF took delivery of its 100th Eagle last June, and the total delivered thus far stands at 130.

Other US combat types on view included the Northrop F-5E Tiger II, and its newer stablemate, the Northrop YF-17. This twin-engined fighter is serving as a development prototype for the proposed US Navy/US Marine Corps F-18 Naval Strike Fighter. The machine at Farnborough was the second prototype of the YF-17, and these two aircraft have flown many air combat trials against other US fighters. The new F-18 will be larger and heavier than the YF-17, and the first flight is planned for 1978, with production for the US Navy expected to exceed 800 aircraft.

However, the most interesting machines at Farnborough (and probably also the

Continued on page 142

Heading photo and below Short take-offs marked the Northrop YF-17's performance. Colours are white and very dark blue, with narrow gold band between blue and white areas on fins. Serial is 201570 in black under tailplane, as is 'NAVY'.



ITALIAN ASSAULT GUN SEMOVENTE



The Italian assault gun — 75/18 M40 was based on the design of the M13/40 tank. Armed with a 75 mm L/18 Howitzer, it first saw action in 1941. It often provided fire support for the M13/40 and was used extensively in North Africa. Another exciting addition to Tamiya's range of 1/35 scale W.W.II tanks. Over 140 pieces to assemble.

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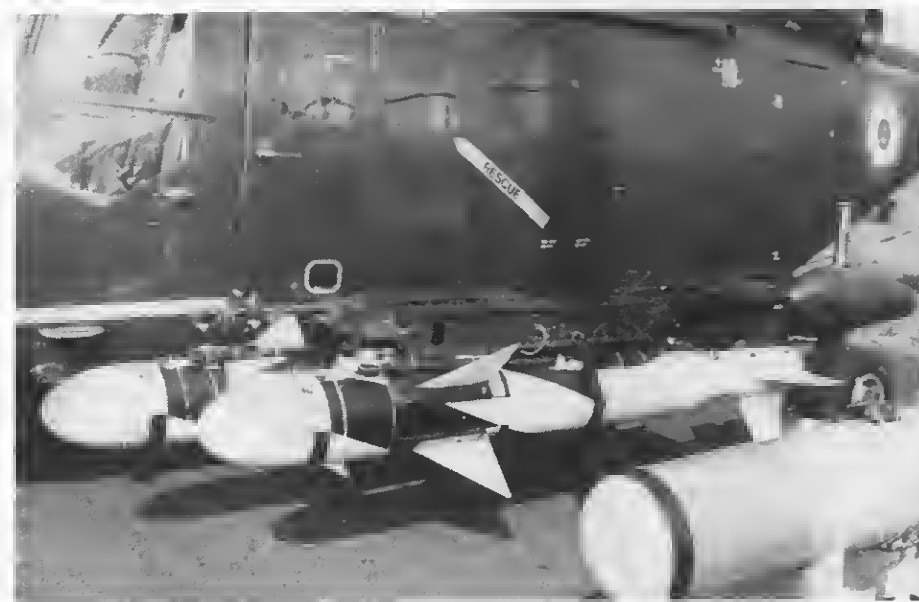
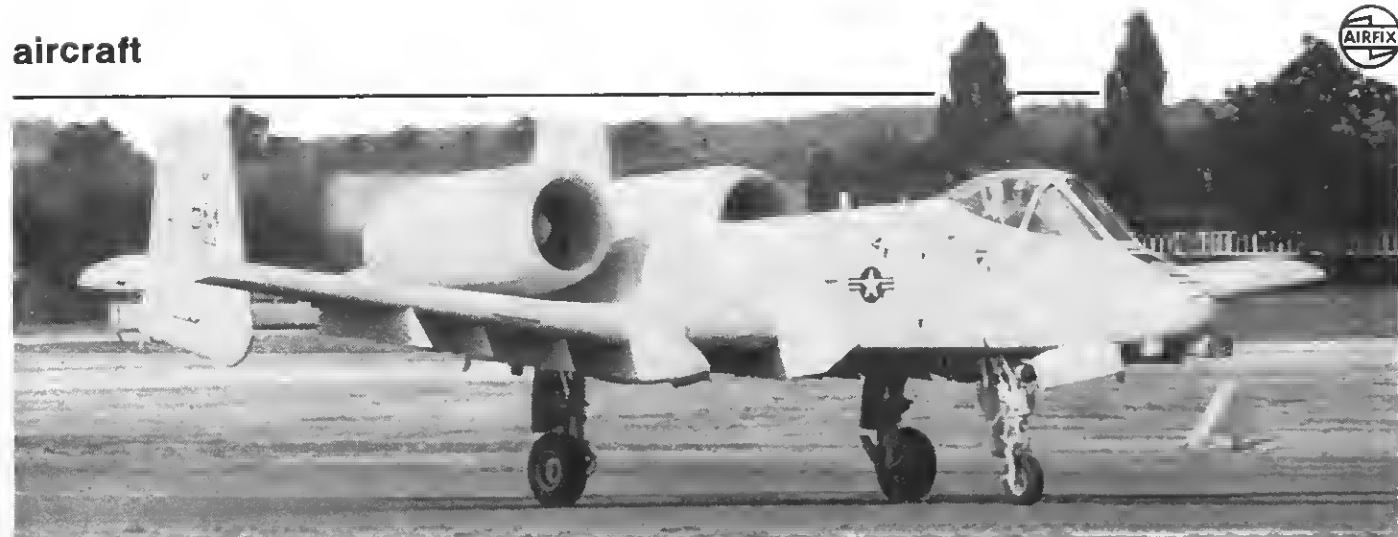
Although produced after W.W.II, the M113 has been used in many theatres of war. It has been used in many roles, as ambulance, mortar carrier, radio truck, flame thrower, and even a command post. This 1/35 scale kit with driver figure is motorized and contains over 120 pieces to assemble.



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RICHARD KOHNSTAM LTD., 13-15a HIGH STREET, HEMEL HEMPSTEAD, HERTS.



Top of page Making its first display appearance outside the USA was the Fairchild A-10A close support aircraft from the 355th TFW, Davis-Monthan AFB, Arizona. **Left** From Scottish Aviation came the new Bullfinch four-seater now with a retractable undercarriage. **Below left** Although not part of the display, one of the most interesting aircraft at Farnborough was this Polish-registered Antonov AN-2 biplane (Terry Gander). **Bottom left** Naval Westland Lynx XZ166 carried four Sea Skua missile development rounds in black and white.

ugliest) were the new Fairchild A-10 and the McDonnell Douglas YC-15. The A-10 is intended for close air support operations, with the emphasis on simplicity of design coupled with massive firepower. The aircraft on display was from the 355th TFW at Davis-Monthan AFB, being the seventh production machine, and following its superb handling demonstrations at Farnborough it was due to tour Europe. Excellent flying displays were also provided by the YC-15, the machine on view being the second prototype of this contender for the USAF's Advanced Medium STOL Transport contest. The YC-15 employs a lift generating blown flap design that greatly reduces take-off and landing distances, and this was well demonstrated in the display.

Despite the invasion from America, the Panavia Tornado commanded a lot of attention, with prototype 06 in the flying display, whilst 08 sat in the static park surrounded by various weapon loads. Both wore RAF camouflage, and 06 has been employed on the development of the weapons delivery and gun firing systems, with 08 being used for weapon aiming trials and avionics testing. Other combat machines on display included Jaguars, a Strikemaster for the Royal Saudi Air Force, the always impressive Saab Viggen, and the never tiresome displays by the Harrier.

The multi-purpose trainer/light strike aircraft market is one that has several followers, with the HS Hawk, the Alpha-Jet and the brand-new AerMacchi MB339 all on show. Nine Hawks staged a flypast on the Wednesday of the show, and the new company demonstrator, G-HAWK brought back memories of past Farnboroughs by spinning from altitude trailing smoke. Ten Hawks will be in service with the RAF by the end of this year, and firing trials with Side-winder AAMs will begin shortly.

The first prototype of the MB339 flew on August 12, with the second following early next year, and it is hoped that the Italian Air Force will purchase 100 aircraft. Power comes from a Viper 632 turbojet, and the



MB339 is a development of the earlier MB326, which was also on display.

Turning to transports, the sixth Concorde, G-BBDG, always had long lines of people waiting to walk through her, while nearby stood a colourful TriStar of Gulf Air. Also of interest was one of six Boeing 707-3J9Cs of the Imperial Iranian Air Force, fitted with wingtip-mounted flight-refuelling pods. These pods can be removed to suit the particular mission, with the fuselage interior being capable of conversion to passenger or cargo roles, or even fitted with extra fuel tanks.

Helicopters were less prominent than in the past, the most interesting being four Lynx, two of the naval model and an army version, with some carrying missile pods, while a civil registered Lynx is now test flying fitted with a Pratt and Whitney PT6 turbine in place of the usual RR Gem.

To list all the aircraft on display would become boring, but worthy of mention was the first Scottish Aviation Bullfinch sports and touring aircraft, developed from the Bulldog and featuring a retractable undercarriage; an HS 748 in the colours of the Belgian Air Force; an Agusta-Bell 212 anti-submarine helicopter of the Italian Navy; a TS-11 Iskra two-seat jet trainer from Poland; and last but not least the tiny jet-powered Bede BD-5J.

Despite some exciting rumours that failed to be realised, Farnborough '76 was still an excellent event, and in addition to the aircraft there was much of interest to be seen in the exhibition halls and other displays. As ever, the flying display was a masterpiece of timing, and with ears still ringing from the roaring afterburners of the new generations of combat aircraft, one wonders as to what Farnborough '78 will be like, apres nationalisation. □

Top of page TF-15 Eagle 71291 comes in to land. Basically white, nose and fin flashes red; rear nose band, fin tips and area around cockpits blue; lower rear fuselage dark grey. **Top right** Second prototype of the McDonnell Douglas YC-15, serial 01876. Note the multi-section blown flaps. Standard USAF tactical camouflage. **Upper right** Italian counterpart to the HS Hawk is the new AerMacchi MB 339. This is the first prototype, registered I-NOVE, in orange and white with rudder logo and inner faces of wingtip tanks dark blue. **Lower right** Carrying underwing stores was camouflaged Hawk XX156. **Bottom right** Panavia Tornado P.08 XX950 on static display surrounded by a vast array of weapons. Note cockpits covered for security purposes.



MODELLERS' DIARY

November 4 1942

ON NOVEMBER 4 1942, the battle of El Alamein (Airfix Battlefront kits, Nos 40653-6/40654-5), one of the most decisive battles of World War 2, ended with the defeat of German and Italian forces led by General Erwin Rommel. El Alamein lies about 60 miles west (111 kms) of Alexandria in the Western Desert, and nearly two weeks earlier, Rommel's defence line, which was protected by anti-tank minefields, had been assaulted by General Montgomery's 8th Army (Airfix Model No 01709-3).

At 9.40 pm on October 23, 1,000 British guns had opened up and pounded, first Rommel's artillery positions, then poured a moving barrage on his forward defences. 8th Army troops advanced behind the barrage and, during the next two days, proceeded to neutralise the enemy defence positions one by one. By November 2, the 8th Army had driven three corridors from the enemy lines and the next night, November 3/4, the Germans began to retreat.

El Alamein cost the Germans and Italians dear: they lost 10,000 killed and wounded and 30,000 prisoners, 1,000 guns and over 500 tanks. The 8th Army, too, paid a heavy price — 13,000 casualties and about 450 tanks. However, their victory opened up the way to more triumphs in the Desert War, which the Germans finally lost in 1943.

November 11 1940

ON THE NIGHT of November 11 1940, in the Mediterranean, 21 Fairey Swordfish (Airfix Model 02005-1) lumbered off the decks of the aircraft carrier *Illustrious* and made a punishing attack on one of the most powerful and best equipped fleets in the world — the Italian fleet in harbour at Taranto, on the heel of Italy.

Armed with 18-foot (5.48 m) Mark XII torpedoes, the Swordfish swooped down through a firework display of anti-aircraft fire and sank three battleships, damaged two destroyers and a cruiser, wrecked the Taranto seaplane base and turned oil storage tanks into a mangled mass of blazing debris.

The Italians had previously been very unwilling to risk challenging the Royal Navy in the Mediterranean. After the disaster of 'Taranto Night' they went in abject terror of doing so.

The single-engined biplanes which produced this paralysing fear were, ironically, already obsolete in 1940. The Swordfish, in fact, more closely resembled the 'string and glue' machines of World War 1 than the speedy, nimble fighter aircraft of World War 2. Nicknamed 'Stringbag', this fabric-covered plane, powered by Bristol Pegasus engines, had a wingspan of 45 feet 6 inches (13.8 m), a length of 36 feet 4 inches (11 m) and could cruise at only 129 mph (239 kph) at 5,000 feet (1,524 m).

Compiled by
Brenda Ralph Lewis

November 12 1944

IN 1942, the British Prime Minister, Winston Churchill, described the 42,900-ton (43,536-tonne), 30.8 knot German battleship *Tirpitz* as one of the most dangerous enemy ships at large during World War 2.

The *Tirpitz* (Airfix Model No 04209-7) posed a deadly threat to supply convoys which sailed to Russia. 'The destruction or even the crippling of this ship is the greatest event at sea at the present time', Churchill declared.

Two years passed before he got his wish. Not until November 12 1944 was the *Tirpitz* sunk in Tromsøfjord, Norway. This was the last of several attempts to sink *Tirpitz*, one of them in September 1943 by midget submarines, or X-craft; another in April 1944 by British carrier-borne aircraft which did much damage with 14 bomb hits.

Tirpitz was finally finished off, seven months later, by 36 Lancasters which hit her three times with 5.5-ton bombs. The battleship capsized, ending bottom up on the fjord-bed with nearly 1,000 men trapped inside her.

Tirpitz was certainly a prize worth claiming and Churchill had not exaggerated the danger she posed. Sister-ship to the *Bismarck*, she carried armour 12.5 inches thick (31.75 cm), eight 15-inch (381 mm) and 12 5.9-inch (150 mm) guns, 16 4.1-inch (104 mm), 16 37 mm and 58 20 mm anti-aircraft guns, eight 21-inch (53.34 cm) torpedo tubes and six aircraft.

November 14 1941

MANY TIMES before they sank her in November 1941, the Germans claimed to have destroyed the legendary aircraft carrier *Ark Royal* (Airfix Model No 04208-4).

German fear of this 22,000-ton, 30.75-knot carrier was thoroughly justified, for *Ark Royal*, who carried some 72 aircraft (mostly Fulmars, Swordfish and Skuas),

Right The antiquated-looking Fairey Swordfish or 'Stringbag' as depicted on the Airfix kit artwork in her later rocket-firing anti-ship role. **Below** The famous *Tirpitz* as depicted by Airfix's artist during an RAF bombing raid.



had been present at some of the most damaging defeats the Germans suffered during World War 2.

She had taken part in the hunting down of the pocket battleship *Admiral Graf Spee* in December 1939. In May 1941, her aircraft had done reconnaissance and submarine-detection duties for the British fleet which sank the *Bismarck* in the North Atlantic. *Ark Royal* also did duty nosing out German submarines in Norwegian waters, and in the Mediterranean helped get vital supply convoys through to the beleaguered island of Malta.

However, it was during these convoy duties that the German submarine U-81 put a torpedo into *Ark Royal*'s starboard side, causing serious flooding and loss of power. *Ark* was put in tow in the hope of saving her, but the hope was futile. She sank at dawn on November 14 1941, within sight of her destination, Gibraltar.

November 19 1600

KING CHARLES I (Airfix Model No 02511-1), who was born on November 19 1600, was one of the most unpopular kings England ever had.

The shy, rather stand-offish Charles, who became king in 1625, was a physically small man, with a rather bad stammer, not much imagination and a stubborn belief in the 'Divine right of Kings'. This was the idea that a monarch was second only to God in his kingdom, and was responsible only to God.

The English Parliament thought otherwise and sought to impress on Charles that he should rule with their help and advice. This was something Charles could never accept. 'A subject and a king,' he insisted, 'are two things clean apart.'

Rather than let Parliament have a say in running the country, Charles ruled without it for many years. This was 'absolute monarchy' — something the English could never tolerate. In 1642, Charles paid the price for his stubbornness when Parliament, led by Oliver Cromwell rebelled against his rule. Charles lost the Civil War that ensued, and in January 1649 he was put on trial as a tyrant, traitor and public enemy. On January 30 he was beheaded on a scaffold outside Whitehall Palace in London.



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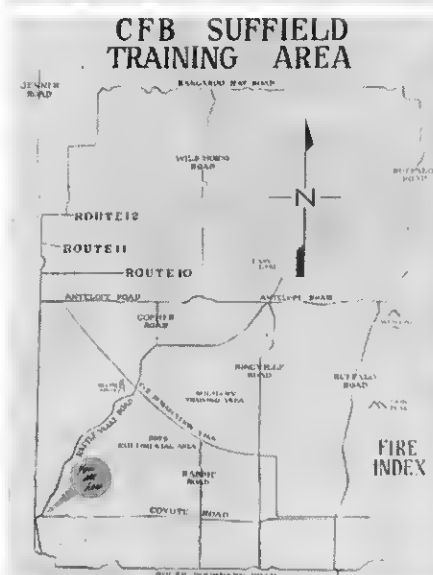
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BATTLEGROUP

IN ACTION



Top of page A Chieftain used by Ajax Squadron on the move. Above The notice board at the entrance to the ranges gives some idea of the layout of the training grounds. For a rough guide to distances, from top to bottom is some 100 km and the travelling time from the camp to Kangaroo Rat Road is in the order of 2½ hours plus by Land Rover. Below The endless prairie - Irish Guardsmen advance by leapfrogging in sections to 'clear' a valley of 'enemy' troops. Navigation away from the roads can be a great problem, and one of the most important jobs of the tireless range safety officers was to make sure nobody got in front of the firing line.



Front line ... Alberta, Canada ... September 1976 Special report from Terry Gander and Bruce Quarrie

'DE-BUS! DE-BUS!'

The dim interior of the armoured personnel carrier was suddenly filled with glaring light as the rear door was thrown open and its occupants — an infantry section from 4 Company, 1st Battalion, Irish Guards — leapt out on to the barren, sun-scorched grass. Running round to the sides and front of the vehicle, the men threw themselves to the ground and poured a withering hail of fire at the Russian infantry dug in on the crest ahead of them.

Columns of smoke from three Soviet T-62 tanks which had already been brewed up by the supporting Chieftains rose into the endless blue sky, casting wreathing brown shadows on the dusty ground as the infantry charged forward and rapidly overran the enemy position.

Then it was back into the FV 432 and off on the advance again. The next objective was an unknown force of enemy tanks and infantry dug in along a winding gully a few kilometres distant. The APC's old petrol engine roared and whined, making conversation all but impossible as it lurched across the rolling plain. Inside, a jerrycan of lukewarm water was passed round, serving more to accentuate than alleviate our thirst. Methodically, Sergeant Nelson fell to cleaning his SLR while the rest of the section dozed or attempted to read their lurid paperbacks. The occasional sonic 'crack' of a 105 mm shell from the supporting Abbots of No 17 (Corunna) Battery, 26th Field Regiment, Royal Artillery, passing

overhead could hardly be heard from within the vehicle.

Behind our 'wagon', No 41, the other three platoon APCs — Alpha, Bravo and poor old Charlie, which had been suffering all day from a recalcitrant gearbox — followed in loose formation, widely dispersed in case we came under enemy fire. The drivers, their faces and goggles caked with the fine dust which pervaded everything, struggled with their roaring charges, while commanders and radio operators attempted to maintain contact with each other through the hissing static and periodic areas of 'dead' ground.

Ahead of us the whole plain seemed to be ablaze, as raging fires, started by the artillery bombardment and maintained by the strong prevailing wind, swept squirrels and rattlesnakes in their path. Without hesitating, the platoon's four '432s' drove straight into the holocaust. Flames, on occasion three or four feet high, surged around the vehicle's tracks, and billowing clouds of acrid black smoke and ash filled our eyes and noses. Then we were through. Anxiously we looked back to make sure that 'Charlie' was still with us. A stalled engine in the middle of those fires, with god knows how many gallons of petrol and hundreds of rounds of live ammunition aboard, would not have been funny.

But it was all right, and minutes later we were de-busing again in the shelter of a steep gully. The Chieftains had done their work thoroughly again, and once more it was a question of mopping up the remain-



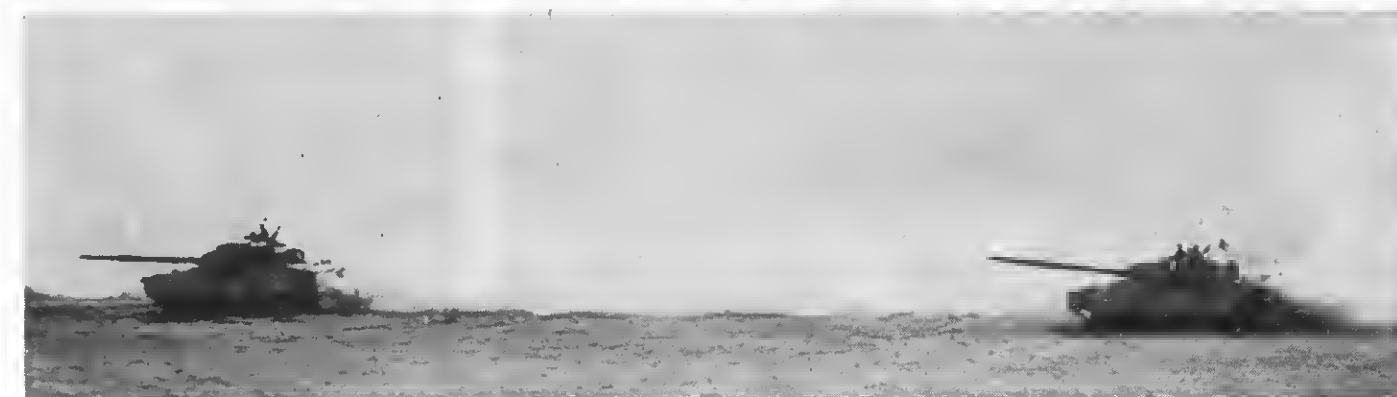
ing enemy infantry. Leapfrogging by sections, with the LMGs putting down covering fire at each stage, our platoon advanced from ridge to ridge down the valley, well spread out to take advantage of whatever scraps of sparse cover were available. Resistance was soon eliminated, and a couple of soldiers doubled down into the valley to check the enemy dead. One came running back to the section commander to report that the way ahead was clear. The unit we had just attacked, he said, according to their identity tags, was from the 141st Motorised Rifle Regiment. And we had a bonus! A map had been found on one of the officers' bodies indicating another concentration of enemy troops on Hill 2142 nearby. But this time we were in reserve, and the task of capturing it would fall to the other platoons. So, trundling through a gap which the engineers had earlier cleared across an enemy minefield, our vehicles halted and 'compo' biscuits and chocolate were passed round while each vehicle prepared a 'brew' in the special electric 'kettles' strapped to their rear doors.

In the evening it would continue, with a penetration through yet another minefield, followed by a dawn assault on strong enemy positions some five kilometres away. But for a blessed few minutes, the bloodshot-eyed, exhausted troops could rest.

Of course, no T-62s burned in reality, nor did bullet-riddled corpses strew the ground. Instead, rusty Sherman and Centurion hulks smoked and plywood targets lay splintered on the grass. World War 3, thankfully, was still just a nightmare possi-

bility. For this was the Suffield training area — a thousand square miles of rolling prairie in the heart of Southern Alberta, Canada, 150 miles from Calgary and a day's drive from the grandeur of the Rocky Mountains to the west. And the day's attacks had all been part of Exercise Ramillies, a 40-kilometre battle run which marked the climax of three weeks' intensive live training for nearly 700 British soldiers from BAOR.

Above The Regimental Aid Post attached to Battlegroup HQ. This consists of a 432 fitted with stretchers and manned by an RAMC doctor and orderlies. Below A brace of 105 mm Abbots. Note bivouac shelters alongside each, and turret stowage panniers. Bottom Wargamers will be interested in the dust clouds kicked up by these two Chieftains. These dust clouds are visible well before and after the tanks themselves.





Top centre A 432 ploughs through the blazing scrub. **Top** Section radio operators with two different types of portable set. **Above** Sergeant Andy O'Neill gives the rifle section of 43 Bravo a briefing prior to an attack. The Guardsman on the left is carrying an 84 mm Carl Gustav anti-tank weapon in addition to his rifle and normal equipment, while his No 2 is the reclining figure — note the 84 mm ammunition container behind him. **Below** A platoon commander briefs his section leaders prior to the day's exercise.

The Suffield training area, former hunting ground of the famous Blackfoot and Cree Indian tribes, became an experimental range used jointly by the British and Canadian forces for the testing of chemical warfare agents in 1941, and many of the little lakes which dot it are still poisoned and discoloured from the gases and other materials which have been dumped into them over the years. An area of undulating scrub grassland, dotted with cactus and wild thyme, and inhabited principally by ground squirrels, rattlesnakes, deer and hawks, the range was leased by the British



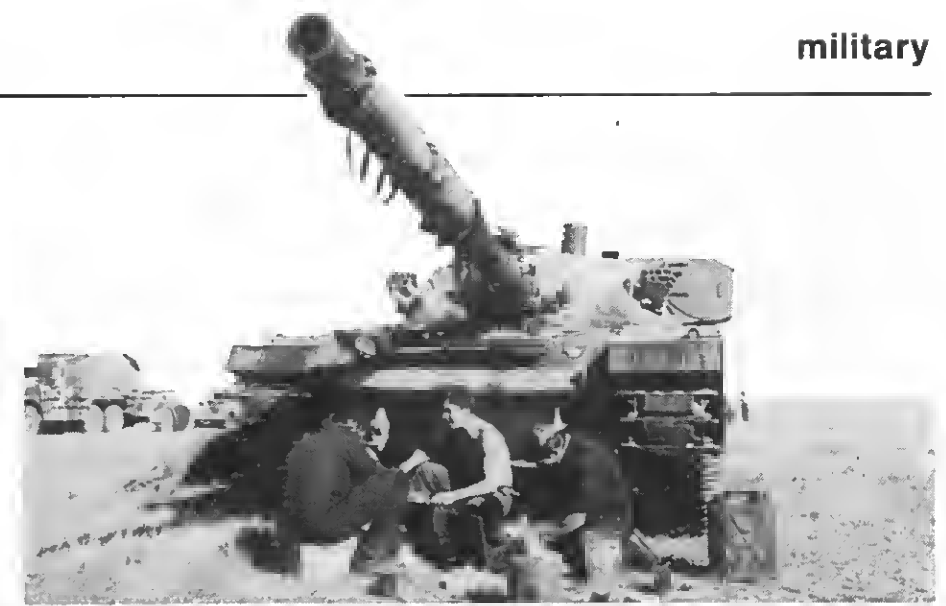
government in 1971 for a period of ten years to give the army a live training area. For such is the range of a Chieftain or Abbot gun, that nowhere else in the world is there room for them to fire live ammunition without endangering life. And asking an army to fight a war without ever having practised live firing would be, as one commentator has already observed, like sending a man who has only used a motor car simulator out to cope with London's rush hour traffic.

Thus, each year, the British Army sends seven battle groups 6,000 miles from Germany to Alberta to practise together for the conflict which all sincerely hope will never materialise in reality. For such is the preponderance of Warsaw Pact armoured and aerial might in Western Europe over the NATO forces that the most which could be achieved by BAOR would be a delaying action until, hopefully, the politicians arrived at a settlement, or the nuclear weapons began to fall. And the general consensus is that NATO would have to resort to tactical nuclear missiles within five days of the outbreak of a conventional offensive in order to prevent Europe from being overrun.

Terry Gander and I were at Suffield at the end of August as the guests of the Irish Guards to witness British battlegroup training in action. Flying out in RAF VC10 XV105 from Brize Norton to Washington, and thence across the rivers Missouri and Mississippi via Denver to Calgary, with a fine view of the Rockies to our left, we were greeted at the airport by two Guards officers and whisked off along the 150 miles of ruler-straight road to Camp Crowfoot, a

huddled encampment named after the chief of the Blackfoot confederacy. At Crowfoot, 26 miles west of the town of Medicine Hat, we were issued with camouflage combat clothing (they even made me a staff sergeant!) then piled into a Land Rover for the 40 kilometre drive across the dusty prairie along Rattlesnake Road to the OK Corral (yes, seriously!). There we were met by Lieutenant James Pollock, the Guards' Intelligence Officer and our mentor for the duration of our stay.

Our rush was well worthwhile, for the battlegroup had a night firing exercise arranged for that evening, and from the spectators' arena we had a fine view of the 'killing ground'. Eight million candlepower flares from the supporting mortars and Abbots cast a lurid glare over the area, silhouetting the targets for the gunners in the Chieftain tanks — Ajax and Badger Squadrons of the 2nd Royal Tank Regiment, also from Germany. Tracer flickered across the night sky from the ranging GPMGs before their methodical stutter reached our ears; then, one by one, and finally in deafening salvos, the tanks opened up with their 120 mm 'long rifles', and red tracers of HESH rounds in flight drifted deceptively slowly towards the targets. One, an oil drum filled with petrol, went up in a boiling mushroom cloud with a muffled 'whoomp', then another. Soon, fires on the ground vied with the flares overhead to provide a spectacle more dramatic than the best Guy Fawkes display ever — albeit an expensive one, with HESH rounds costing approximately £200 apiece. Finally things quietened down, the 'enemy attack' repulsed, and we gratefully clam-



bered into the mortar command FV 432 at the invitation of Lieutenant Julian Ramos for a ride back to battlegroup HQ. The evening wasn't quite over, however, for on the way back we had to stop to extricate a bogged-down 'deuce and a half' truck. On the first attempt, its bumper buckled, but the second try got it moving again. Then sleep, stretched out in a sleeping bag on the sun-dried ground — and I don't think either of us would have noticed if we'd been lying on a bed of cactus! □

To be continued next month.

Top A moment's peace for a Chieftain crew, and lunch from the wide assortment of 'compo' rations available. **Above** 'Softskin' workhorse, the ubiquitous 'deuce-and-a-half', seen here with a water bowser. **Below** FV 432 fitted with the GPMG turret. Flags were flown at practically all times, red denoting that live ammunition was loaded and green that the breech was clear. **Below left** Part of the battlegroup assembled for a falling plate rifle shooting competition. The men with black berets are from 2 RTR while those in the light brown are from the Irish Guards.



NIGHT FIGHTERS



Beaufighter, Havoc and Mosquito by Bryan Philpott

THE ONSLAUGHT by the Luftwaffe during 1940 and how it was met by RAF Fighter Command during the day, is known to those who have only the slightest leanings towards the history of air warfare during World War 2. But those who study the subject more deeply will already be aware that when the German air force turned to raids by night their loss rate fell dramatically. Day fighters pressed into service as night fighters had the utmost difficulty in locating their opponents, especially when they relied solely on the night vision of the pilot concerned.

As mentioned last month, the Defiant had a measure of success in the night fighting role but it was not until specialist aircraft equipped with airborne interception radar, heavily armed, and with a much longer loiter time, came into service that the balance began to tilt in favour of the defenders.

Before such aircraft as the Beaufighter and Mosquito made the night sky a distinctly unfriendly place for any night raiders, many experiments were tried to combat the menace of the enemy bomber.

During the three months September to November 1940, the Luftwaffe flew over 12,000 night sorties against British targets during which they lost only 81 aircraft which represented less than one per cent of the numbers sent to attack these islands. Since the strength of the Luftwaffe bomber squadrons at this time totalled over 1,400 front line aircraft which were being replenished at a rate of 300 a month, it is clear that they could sustain such losses indefinitely. Of the 81 aircraft destroyed only eight fell to the guns of British fighters, and although this represents ten per

cent of the total destroyed, which in percentage is an impressive figure, it only serves to prove that figures can be misleading, since the eight aircraft concerned represent only a very insignificant proportion of those which were involved in the raids.

From this it is clear that urgent action had to be taken, and one of the ideas tried at this time was the use of an airborne searchlight, the aircraft chosen to carry this being the American-designed light bomber, the Douglas Havoc.

Turbinlite Havoc

The Havoc had already been used in another scheme attributed to Prime Minister Winston Churchill and called 'Operation Mutton'. This idea was for Havocs to carry aerial mines which comprised 2,000 feet of piano wire which had a bomb attached to one end and a parachute to the other. The object was to drop these mines ahead of attacking bombers; the theory being that any bomber hitting the wire would cause the parachute to drag the bomb against it where it would explode with unpleasant results.

This weapon was a development of an earlier idea which employed a line of rockets which fired a similar mine in the path of approaching bombers, this going under the rather quaint title of PAC, which stood for Parachute and Cable. The effective

Top of page Merlin-engined Beaufighter NF11 with code letter 'G' but no serial visible, September 1941 — one of the illustrations from Bill Gunston's superb new book on night fighters reviewed elsewhere in this issue. **Below** Author's model of a Turbinlite Havoc in 1:72 scale.



height of PAC was about 600 feet and although it was used in daylight, resulting in the loss of at least one Dornier Do 17, it was clearly only effective against low flying aircraft.

No 420 Flight based at Middle Wallop tried Operation Mutton from their Havocs, but with no success, so the idea was soon abandoned as was a similar one which involved hanging mines on long cables from barrage balloons.

Against this background of desperate defence, Wing Commander W. Helmore put forward the suggestion of using an airborne searchlight. The problem of designing a searchlight with enough power whilst staying light enough to be carried in an aircraft together with battery equipment, fell to GEC who solved it fairly quickly. However, it quickly became apparent that to equip a fighter with a searchlight, airborne radar, and a crew would be, to say the least, very difficult. It was at this stage that the Havoc again came into the reckoning; the searchlight and radar being fitted into this aircraft which would operate with a pair of satellite machines. The theory was that the Havoc would home on to its target by using radar, then, when it was close enough, the 2,700 million candle power searchlight would be switched on illuminating the target for the satellite aircraft — Hurricanes — to administer the coup de grâce.

A total of 70 Havocs, 31 Mk 1 and 39 Mk II, were equipped with the Helmore Light, and these served with ten squadrons and one flight. Although some success was achieved, many problems were encountered, these including the loss of three crews of No 531 Squadron as the result of a collision between the Havoc and its satellite aircraft; several cases of the 'satellites' losing the Havoc, and the satellites' guns jamming at the crucial moment. One of the other problems encountered by the crews was the 'after glow' which occurred when the searchlight was switched off, this effectively keeping the Havoc illuminated for the enemy gunners. A stall turn by the intended victim usually proved an effective counter as the ponderous Havoc could not manoeuvre very quickly, and when No 534 Squadron experimented with Typhoons as satellites in August 1942 they proved to be too fast for the mother aircraft. No 538 Squadron, which on its formation was

commanded by Fighter Command's only VC, Squadron Leader J. B. Nicholson, achieved the only recorded success on the night of April 30 1942 when Flight Lieutenant C. V. Winn flying Havoc AH484 'A' illuminated a He 111 which Flight Lieutenant Yapp in one of the satellites destroyed.

All ten squadrons were disbanded in January 1943 with a record that read, one enemy aircraft destroyed, one probably destroyed and two damaged, plus one British Stirling downed by mistake. On this rather inglorious note ended an interesting experiment which, if nothing else, has provided a novel conversion of the Airfix Boston.

The rivet detail on this early Airfix kit is neatly done but a little too obtrusive, so it is a good idea to sand off or at least reduce this with wet and dry paper before any assembly is carried out.

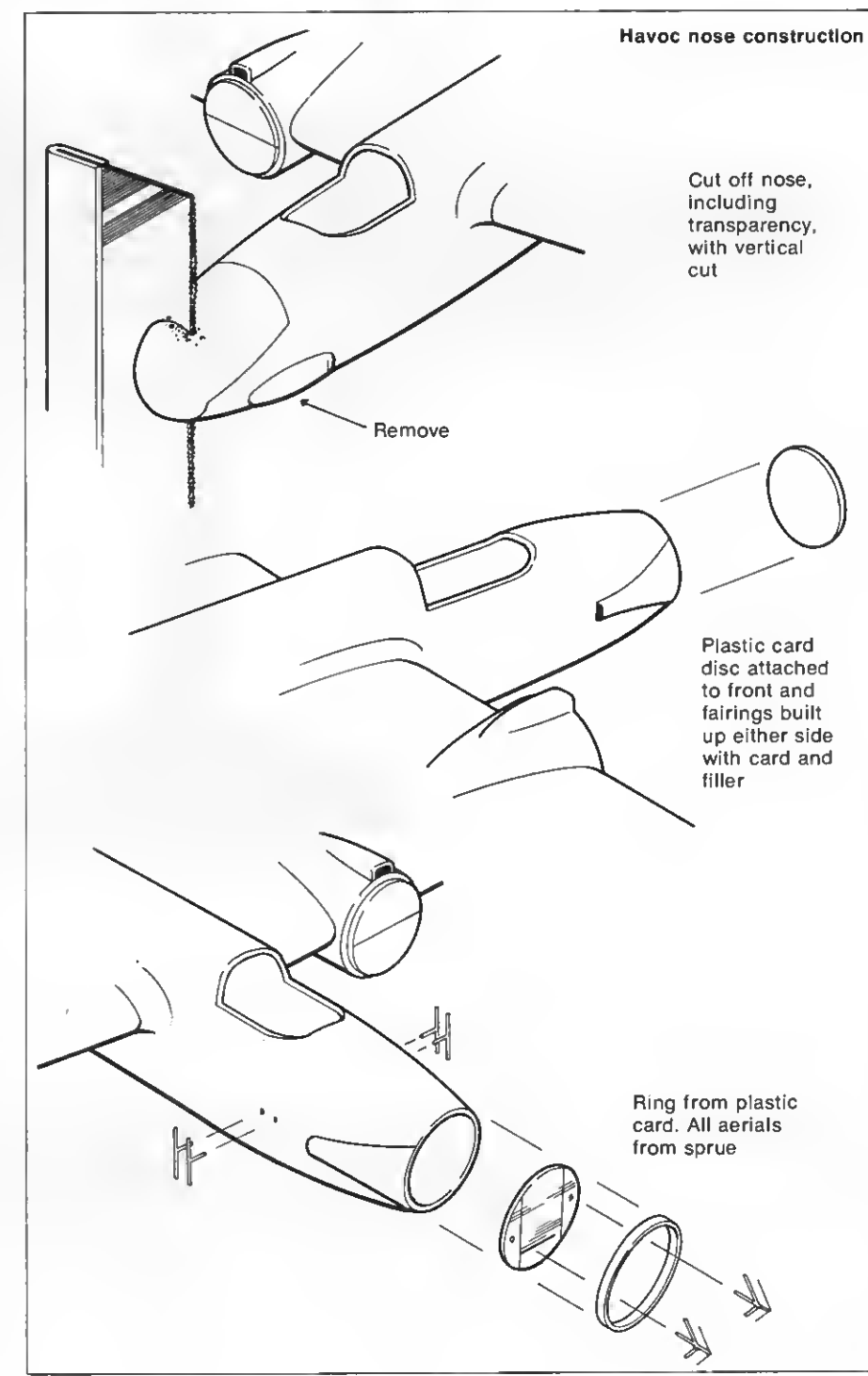
Stage one in the kit instructions is carried out as detailed but it is worth adding more detail in the way of side consoles and instrumentation. Two strips of 20 thou plastic card are cemented inside the fuselage halves at the nose behind the bulges housing the forward-firing guns, these must pass over the location points for the nose wheel leg and holes are drilled into the strips to allow this. The fuselage is then assembled as the kit instructions but the nose transparency, part 55, is added at this stage. Once the assembly is dry, the nose is cut off at the first panel line in the transparency. *It is essential* that this cut is vertical to the centre axis of the fuselage. The bulges housing the front armament are now sawn off and it becomes apparent why the two 20 thou strips were inserted, as these now form a base for filler which is used to fill the holes left by the removal of the bulges. When it is dry, the filler is sanded to the contours of the fuselage but at this stage it is not necessary to obtain a final smooth finish.

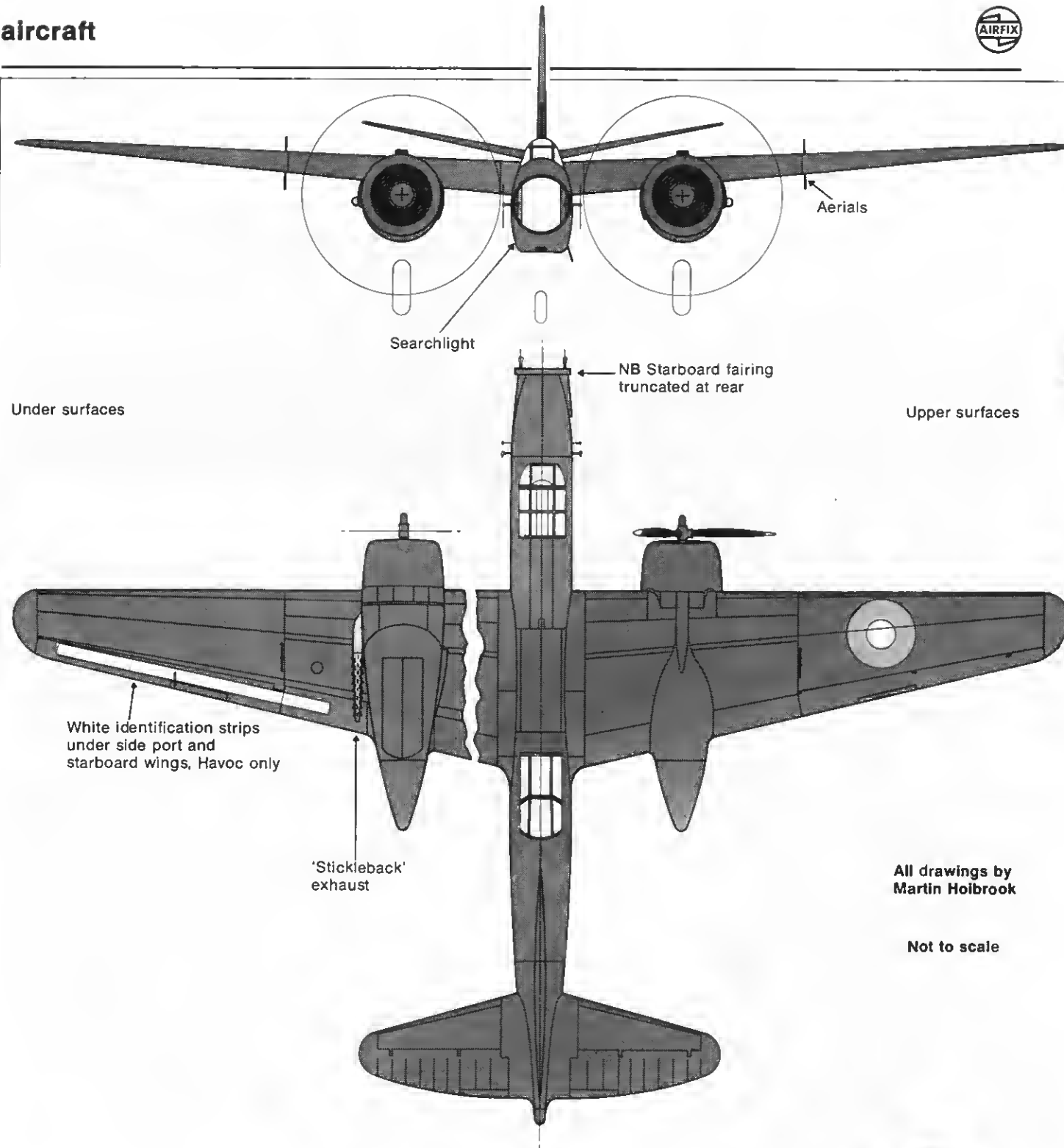
Two discs 9 mm in diameter are cut from 20 thou card and laminated together, when dry they are sanded to remove any rough edges and to ensure that they are both the same diameter. A strip of 10 thou plastic card or Microstrip, 3 mm wide, is now cemented around the periphery of the laminated disc. I found that the best way to do this was to push a pin into a flat surface, sandwich the strip and disc against this, then holding it firmly in place work around the diameter inserting pins at regular intervals, until a ring of pins is holding the strip against the edge of the disc. Now take a small brush filled with liquid cement and allow this to run around the edge between the disc and strip, the end result will be a perfectly formed disc with an overhanging strip.

The complete nose disc is now cemented on the front of the fuselage, lining up at the top and bottom. It will be seen that two semi-circles protrude either side of the aircraft's nose which now has to be built up to match these and give a circular cross-section at this point. For the two nose fairings I chose to use two blocks of balsa wood glued into position and shaped when they were dry, but laminated plastic card will do just as well, and must be used if you have an eye to entering the completed model in any IPMS competitions. The side view of the fairings is clearly shown on the drawing and it is as well to note that the



Another view of the author's Turbinlite Havoc model finished in the colour scheme shown on the next page.

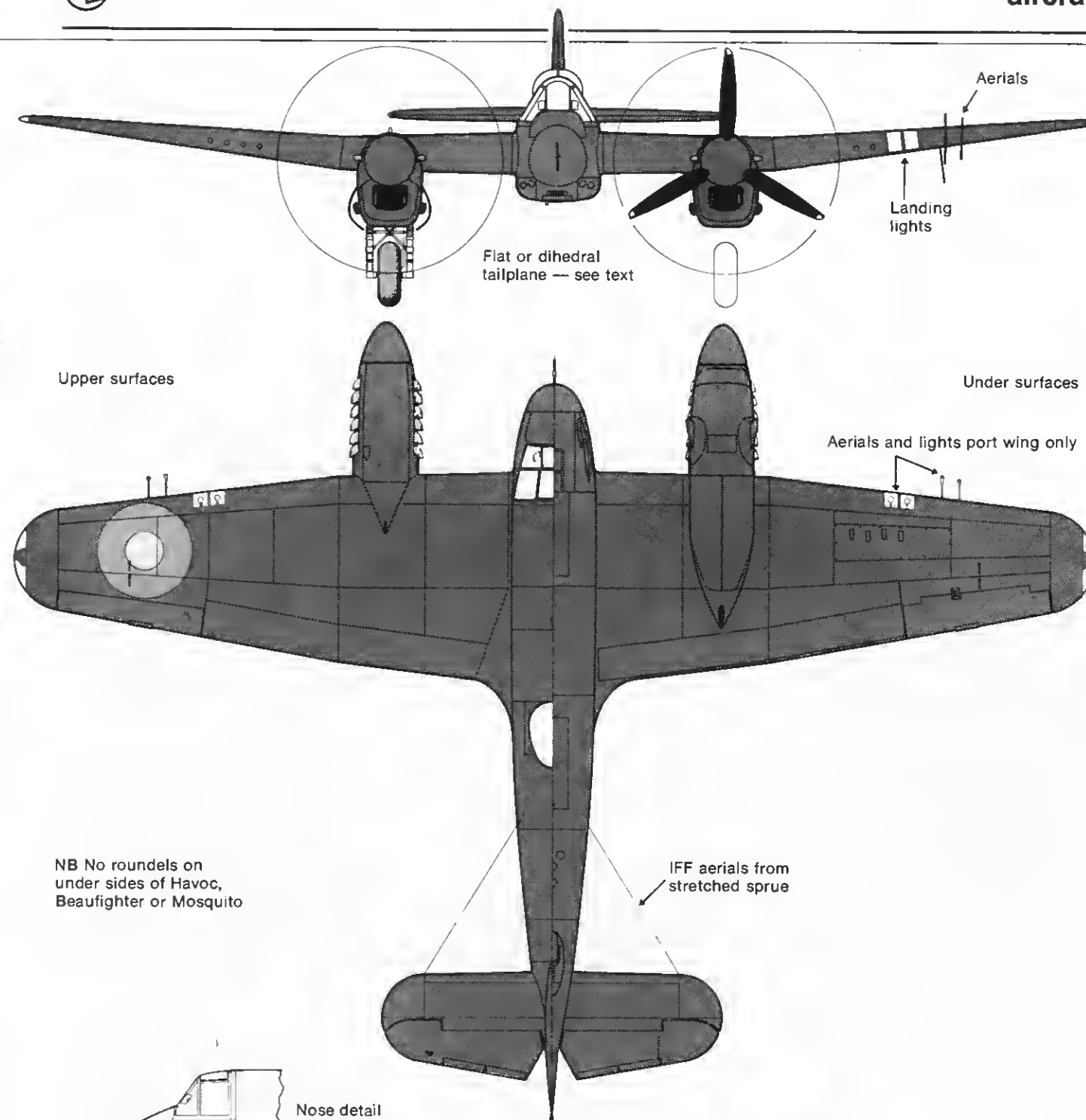
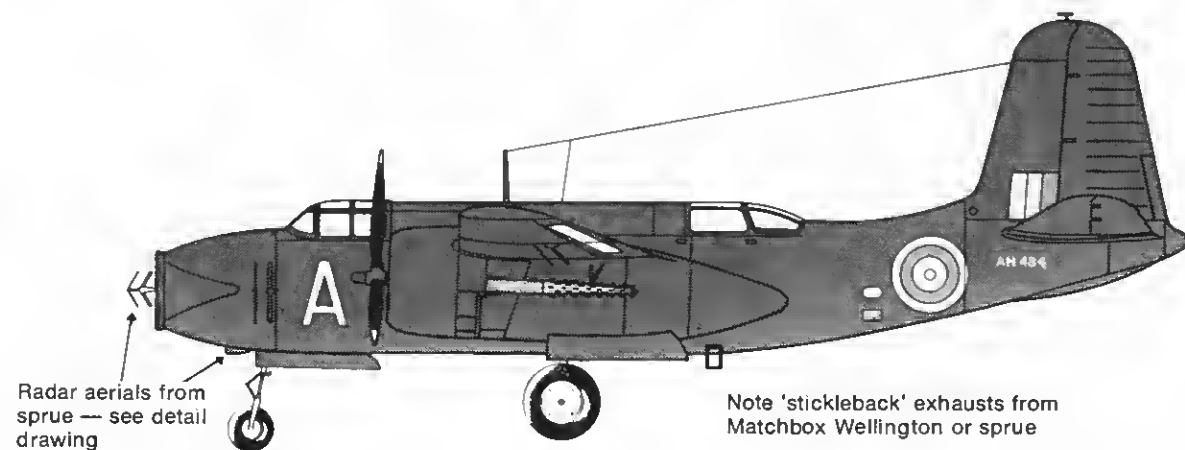




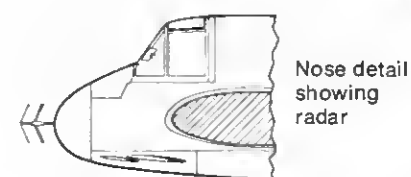
All drawings by
Martin Holbrook

Not to scale

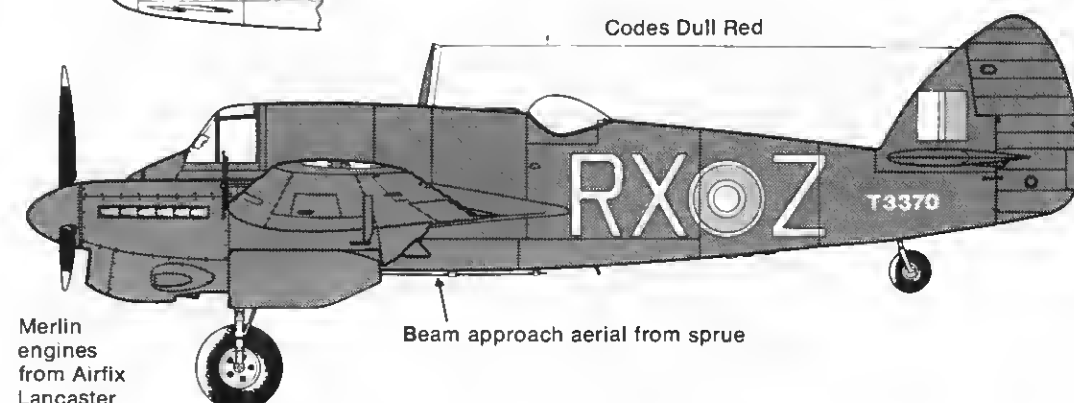
Turbinlite Havoc
No 538 Squadron
AH484
April 1942
RDM Black
overall



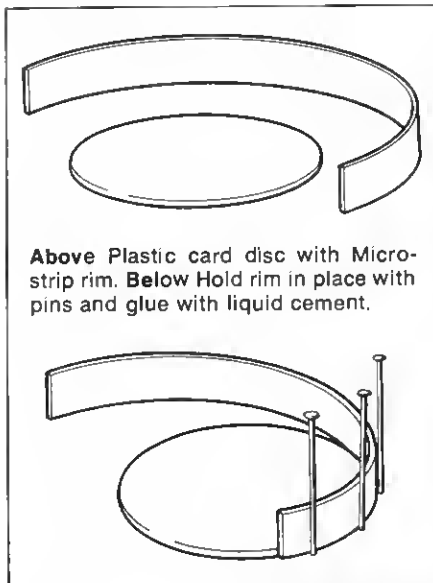
NB No roundels on
under sides of Havoc,
Beaufighter or Mosquito



Nose detail
showing
radar



Beaufighter NFII
No 456(F) Squadron
T3370
RDM Black
overall



Above Plastic card disc with Micro-strip rim. Below Hold rim in place with pins and glue with liquid cement.

one on the starboard side is truncated to form an outlet for cooling air which is ducted in through an intake under the nose which is also formed from balsa or plastic card.

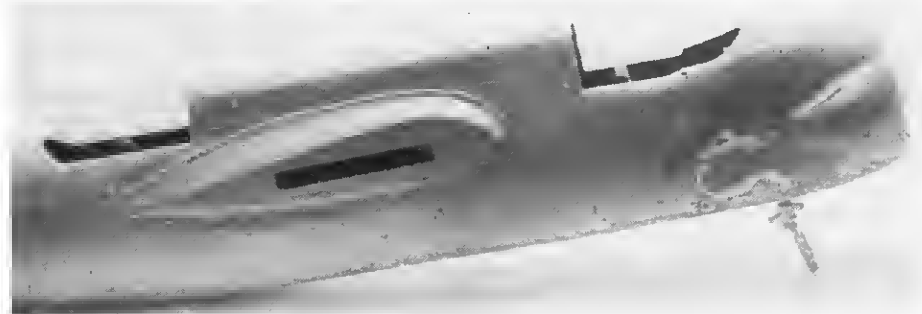
This method will result in a solid nose which has to be painted to represent the searchlight, but it is not too difficult to form a dished silver reflector to insert in the fuselage and make the front disc from clear plastic card. Whichever method is used be sure to add weight in the nose compartment before the disc is cemented in place, otherwise the completed model will not stand on its tricycle undercarriage.

Small holes are now drilled either side of the nose on the fuselage centre line to take stretched sprue radar aerials which are added after all painting has been completed. Radar aerials also appear below and forward of the cockpit and holes to accept these are made at the same time.

Fuselage transparencies are cemented in position making sure that the two portions of the rear gunner's cockpit, parts 57 and 58, are cemented in the closed position. The wings and tail units are assembled as per the kit instructions but the elevators are a little overscale in thickness so these should be replaced with new ones cut from 30 thou plastic card with ribbing simulated with stretched sprue as was done for the Defiant.

The only modification to the wings and engines is the drilling of two holes, in the port wing, to take aerials as shown on the drawing. It is also a good idea to reduce the thickness of the wing trailing edges by sanding the insides to a more acceptable thickness before the wing halves are joined, this preserves any surface detail and in my opinion is better than reducing the thickness by sanding the outer surfaces.

The Havoc's engines were fitted with flame damping exhausts which are sometimes called 'stickleback' type exhausts, and these can be produced in two ways. The easiest, but more expensive method, is to use the exhausts from a Matchbox Wellington, parts 66 and 67, which need the front ends trimmed down in length to fit the recesses in the Boston kit nacelles, and the curved portions at the rear ends removed. The second method is to shape the exhausts from thick sprue and simulate the



Havoc nose under construction showing fairing.

'sticklebacks' with small chips of 10 thou plastic card. This is a long and tricky job if the finished exhausts are to look right, but is naturally much less expensive than taking the parts from a Wellington.

All finished components are assembled and any join lines filled then the model is given a coat of matt white or grey before final painting.

Turbinlite Havocs were painted RDM 2 black over all with white identification panels on the wing undersurfaces. Airfix paint M6 or Humbrol HB 10 are close approximations for the black soot type paint used on this aircraft. Various colour code letters, usually light grey or dull red, and red serials were applied, but it is not clear just how many of the Turbinlite squadrons carried aircraft individual letters and/or codes. The drawing shows how 'A' for Apple of No 538 Squadron might have looked at the time of its successful interception related earlier. Additional colour schemes and alternative codes for Havocs and Turbinlite Havocs can be found in Mike Bowyer's book *Fighting Colours* published by PSL at £3.95. Markings came from the spares box and Letraset sheets.

Beaufighter Mk II

Although the success of the Havoc as a night fighter was somewhat limited, it must be remembered that it was being used very much as a stop-gap whilst aircraft more suited to the night fighting role were being developed. One of these was the famous Bristol Beaufighter which eventually served with 52 RAF squadrons acquitting itself in every role it was asked to undertake.

On the night of November 19 1940 a No 604 Squadron Beaufighter shot down a Ju 88 thus recording the first of many aerial victories that were achieved by this pug-

nacious looking fighter. The Beaufighter was the first twin-engined fighter that possessed sufficient performance to turn to advantage the early airborne interception radar first used in its predecessor the Blenheim 1F, and in so doing laid the foundations from which the RAF's highly efficient night fighter force evolved.

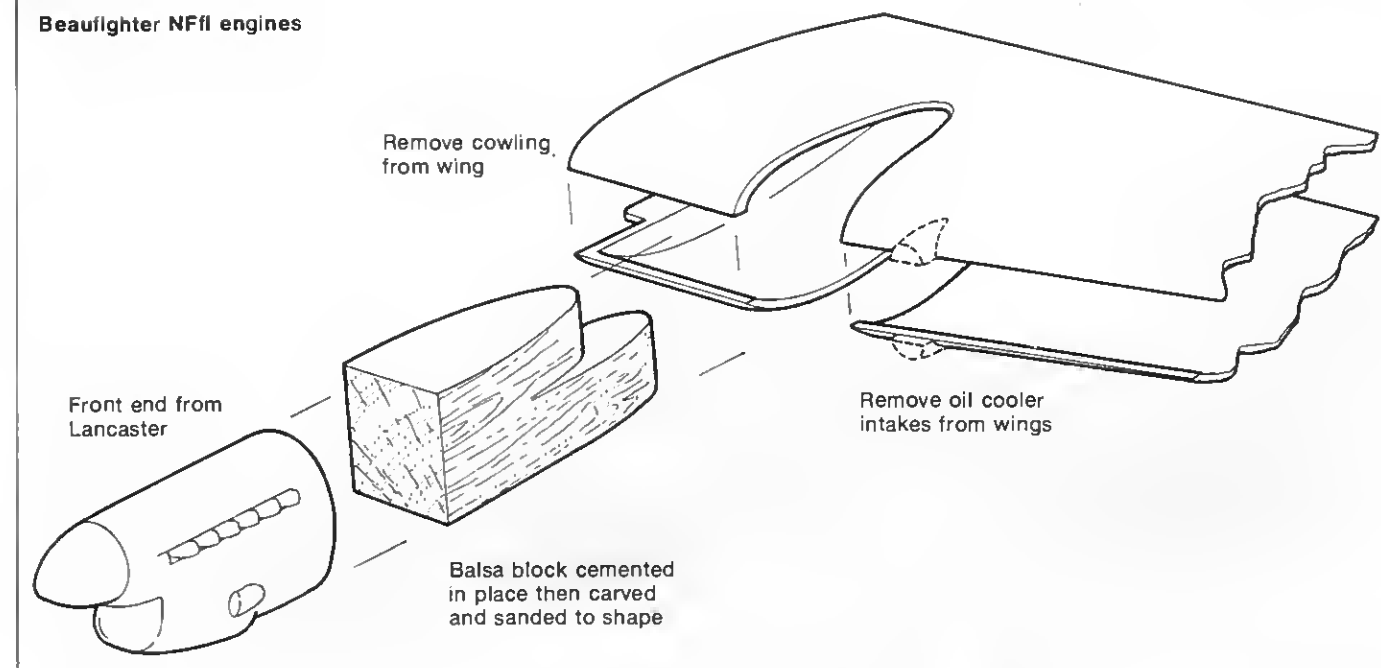
Designed as a private venture, the prototype first flew on July 17 1939, having been based on the design of the Beaufort torpedo bomber. By the time of its first flight the design had been adopted by the Air Ministry and specification F17/39 was issued. The first major production version was the 1F and this was issued to the RAF's Fighter Interception Unit at Tangmere for operational trials on August 12 1940. During September four squadrons were equipped with the aircraft and the distinction of carrying out the first operational night patrol fell to No 29 Squadron on the night of September 17-18. By spring of the following year over 200 Beaufighters had been delivered and the Luftwaffe's night bombers were beginning to suffer at the hands of their new antagonist.

First versions of the aircraft were all powered by the Bristol Hercules radial engine which was also used by the Stirling and Halifax whose demands for the engine prompted the Bristol design team to consider an alternative power supply. As a result of this the Rolls-Royce Merlin XX was selected and the first Beaufighter equipped with these engines, and known as the Mk IIF, made its debut on March 22 1941. Over 400 Mk IIFs were built and used mainly in the night fighter role on home defence duties. Replacement of the huge radial cowled Hercules engines with the slim in-line Merlins caused one or two problems, as they reduced the area forward of the centre of gravity which adversely affected directional stability. One modification that

Side view of author's Beaufighter NFII conversion.



Beaufighter NFII engines



came about during investigation into the loss of stability was the introduction of 12° dihedral to the tailplanes which was subsequently retrospectively fitted to all versions. Another Mk IIF (T3032) was also fitted with an extended dorsal fin which was later used on the Mk X, a version powered by the original Hercules radial engines.

The Merlin XX engines gave the Mk IIF a slightly better performance than the original Hercules-powered aircraft, but when supplies of the latter became assured they continued to be used, so it was only this mark that saw service using the in-line liquid cooled Rolls-Royce engines.

The Airfix kit of the Beaufighter is one of the most popular in the range and although it needs some modifications to make it strictly accurate (see *Aircraft Magazine Guide No 2*), a lot of this work disappears with the removal of the slightly undersized Hercules when the Mk IIF conversion is tackled.

Having recently carried out this conversion on the Revell 1:32 scale Beaufighter using moulded engines, it was interesting to turn to the smaller 1:72 scale model where moulding was not necessary due to the availability of suitable Merlin engines in 1:72 scale. The obvious choice was power units from the Airfix Lancaster which does not really result in a wasted Lancaster as it can be used to make a Manchester or radial engined Mk II.

In the November 1968 *Airfix Magazine* Alan W. Hall described the Mk IIF conversion and I found the methods used by Alan to be just about the best way of tackling this project, so the following work is based very much on that carried out by him. The fuselage halves are joined together as described in the kit instructions but the age of the kit is reflected in the total lack of cockpit detail, so this should be added with bits and pieces from the spares box and scratch-built components. A Beaufighter fuselage is displayed in the RAF Museum at Hendon and this will provide useful reference if you live near enough to pay a visit or are planning a holiday in the capital at some future date.

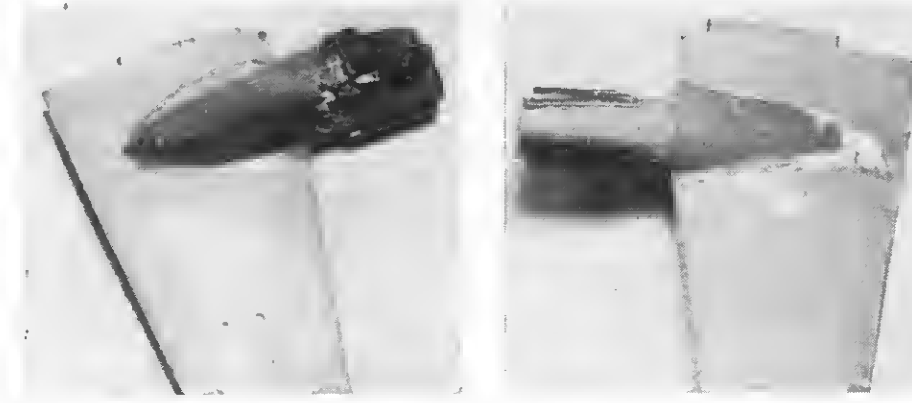
Unlike Alan I removed the Hercules nacelles from the wing halves before I joined them together as I found it easier to make accurate cuts along the nacelle lines while the wing halves still had their flat inner surfaces separated. A sharp modelling knife was used to follow the line of the nacelles and several progressively deeper cuts soon removed all trace of the unwanted engines. The cuts were then cleaned up with wet and dry and the wing halves joined together and left overnight to set really hard. Two blocks of balsa were then cut roughly to the shape left in the wing by the removal of the unwanted nacelles and these were cemented into the empty gaps. Make sure that these blocks protrude above and below the wing surfaces so that there is sufficient material for carving the new shapes. When the balsa blocks had set, horizontal and vertical centre lines were marked and the front portions of two Lancaster engine nacelles were lined up on these and their rear cross sections marked on to the front of the balsa. The Lanc nacelles were cemented together whilst the other work was drying, and the vertical cut separating the front from the rear was made on the panel line just aft of the exhausts.

Having marked the cross section of the

Merlins, the balsa was very roughly carved to this before they were cemented in place. It will now be seen that the balsa block filling the gaps left by the removal of the Hercules nacelles is much wider than the Merlins. Excess balsa is carefully cut away by first making cuts parallel to the wing surfaces then vertically down the thickness of the new engines. This results in the removal of wedge-shaped pieces leaving behind a correct width Merlin plus a new balsa leading edge either side of the new power egg. Once this rather tricky step has been carried out, final shaping is done with progressively lighter grades of sandpaper. The top cowlings extend back to the main spar and are therefore much shorter than those removed. But underneath the line follows very closely that of the original Hercules and in fact ends in exactly the same position which is just forward of the flap line.

It cannot be stressed enough that considerable care is needed in shaping the cowlings if both are to be identical, if this is not done the whole model will be marred by uneven shaped nacelles and this is particularly noticeable on the top surfaces. When satisfied that the nacelles are the correct shape and the balsa has been smoothed into line with the surrounding

Upper (right) and lower (left) views of Merlin engines in process of being faired on to Beaufighter wings.





Al VIII B radar installation with Lucero beacon homer in thimble-nose Mosquito NF XII in January 1943 (IWM via Bill Gunston).

plastic parts, a coat of grain filler is applied and this is rubbed down with flour paper once it has dried. At this stage I applied a coat of matt white to the wings where the work had been carried out so that I could check that no unsightly joins were still in evidence, by doing this at this stage it enabled any further attention to be carried out before the wings were fitted to the fuselage. The appearance of the Merlins is greatly improved by hollowing out the chin radiators and backing these with plastic card and removing the oversize rivets that appear along the cowling lines.

The completed wings are now cemented to the fuselage and any gaps along the join line filled with body putty. The undercarriage doors from the kit are now placed along the lower edge of the wooden cowlings and the well line marked, this is then removed with a razor saw and sharp knife leaving a flat area inside into which are inserted the undercarriage legs. Make sure that both legs are inserted the same amount otherwise the finished model will stand with a list to port or starboard. To give the area strength I fixed the main oleos into the balsa with Araldite and left them to dry for about 12 hours. The hollowed-out balsa wells were treated with grain filler before this operation and

painted before the legs were finally located. The undercarriage doors from the kit are then cemented in place again with Araldite, but before this is done the bulges at their front ends are sanded off.

One point that should have been mentioned during work on the wings was the removal of the oil cooler intakes outboard of the Hercules nacelles. These are simply moulded protrusions on the wing surfaces at the leading edge and the plastic is thick enough for them to be cut off and sanded smooth without any danger of penetrating the wings.

The tailplanes are now placed in position and can be cemented with dihedral as provided for in the kit or without dihedral. If the latter is chosen, the locating stubs are removed and the location points on the fuselage filed flat. Since this modification was carried out to all Beaufighters, either version is correct, it is just a question of checking reference material (which is available in considerable quantity) before selecting a scheme for the model you are making, and ascertaining whether or not the aircraft chosen was fitted with or without the dihedral tail at the time it was photographed. As the Revell Beaufighter mentioned earlier was modelled with a flat tailplane, I decided to ring the changes on

this one with the dihedral version.

Radar aerials fitted to the nose and wings were made from heat stretched sprue, the arrow heads being formed on the corner of a hard block of wood while the sprue was still in a flexible condition then plunged into cold water to ensure the retention of a nice sharp angle.

Lancaster propellers and wheels from the kit completed the model which was then painted overall black. Photographs of Beaufighters in this scheme usually indicate that they were often quite scruffy, so when the black paint was dry, I streaked it by running diluted black paint mixed with a touch of light grey over join lines and control surfaces. A certain amount of wear was also shown around the leading edges and crew access points with rub and buff.

The prototype Mk IIF was finished in Dark Green and Dark Earth camouflage with yellow undersurfaces so this scheme would make an interesting variation, especially if you make a point of collecting prototype aircraft.

Fighting Colours, mentioned earlier, Camouflage and Markings No 9 and Profile No 137, will provide enough inspiration for a variety of other finishes for this aircraft.

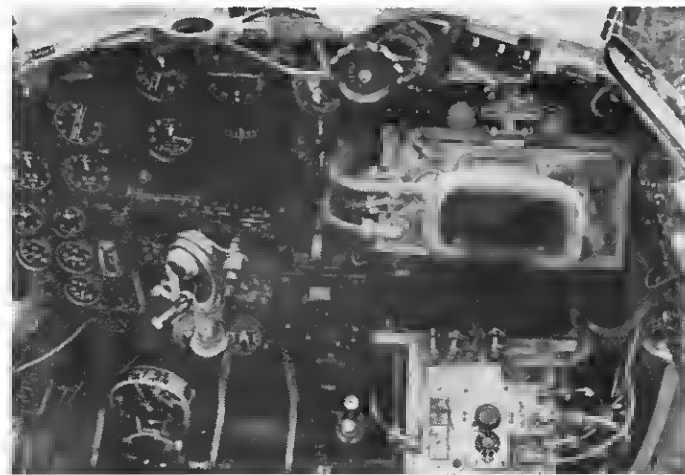
de Havilland Mosquito

Together with the Spitfire, Hurricane and Lancaster, the Mosquito is probably one of the most well remembered British aircraft of World War 2. Conceived in 1938 and allocated the type number DH 98, the Mosquito owes a lot of its initial design to the famous Comet racers, whose graceful lines can be detected in their more warlike cousin.

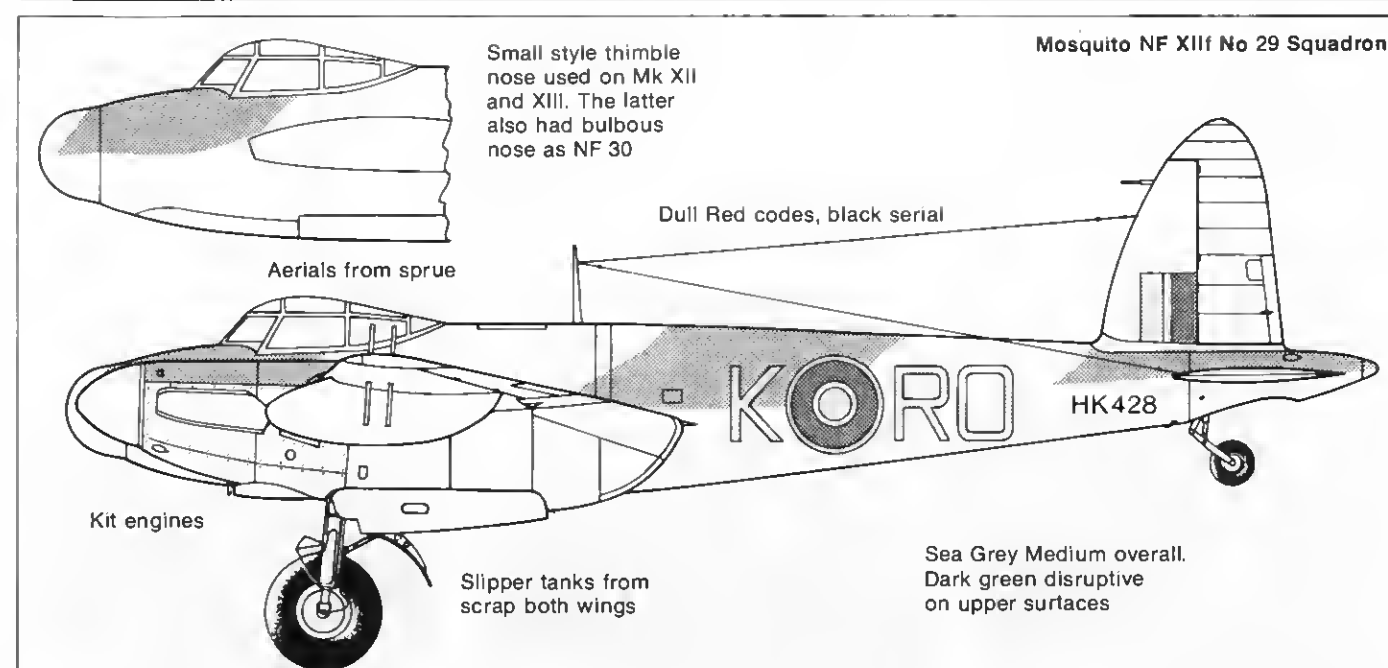
The idea of an unarmed bomber, constructed mainly of wood, and relying on speed and manoeuvrability to avoid interception, was not one that appealed greatly to the Air Ministry during the early days of the war. But fortunately Air Marshal Sir William Freeman, who had already foreseen the Mosquito's potential, persisted in championing the aircraft on every possible occasion and, backed by the unshakeable confidence of Geoffrey de Havilland — who proceeded with the type as a private venture — official recognition was achieved. This came in the form of an initial contract for 50 bombers placed in March 1940.

From these small beginnings emerged an aircraft which captured the hearts of a nation as well as those who flew and operated it. The Mosquito excelled in every role that it was called upon to perform and, although designed as a bomber, it met equal, if not greater success, in the capacity of a fighter, especially as a night fighter. So it is not unfair to claim that as a bomber the Mosquito was probably the best night fighter in the world!

The potential of the aircraft as a fighter had, of course, been realised by de Havilland, who made provision in the original design to produce an armed version and eventually the original 50 were produced as a batch of 20 bombers and 30 fighters. The prototype fighter with reinforced wing spars and a modified nose, flew for the first time on May 15 1941, and it was this aircraft equipped with Mk IV Airborne Interception Radar, that was to lay the foundation of the success that was to come in the night fighting role.



Good instrument panel detail of a Mosquito NF XII showing the Al VIII radar installation on the right (IWM via Bill Gunston). For further details of the development and combat history of the aircraft covered in these conversion articles, readers are recommended to Bill Gunston's new book *Night Fighters* (PSL, £4.50).



Designated NF Mk II, the first versions entered service with Nos 23 and 157 Squadrons in May 1942 and met immediate success when No 23 Squadron claimed a probable later that month. It is appropriate therefore that an example of one of this squadron's aircraft can be constructed straight from the Airfix kit since the NF II with No 23 Squadron markings is one of the three versions contained as standard.

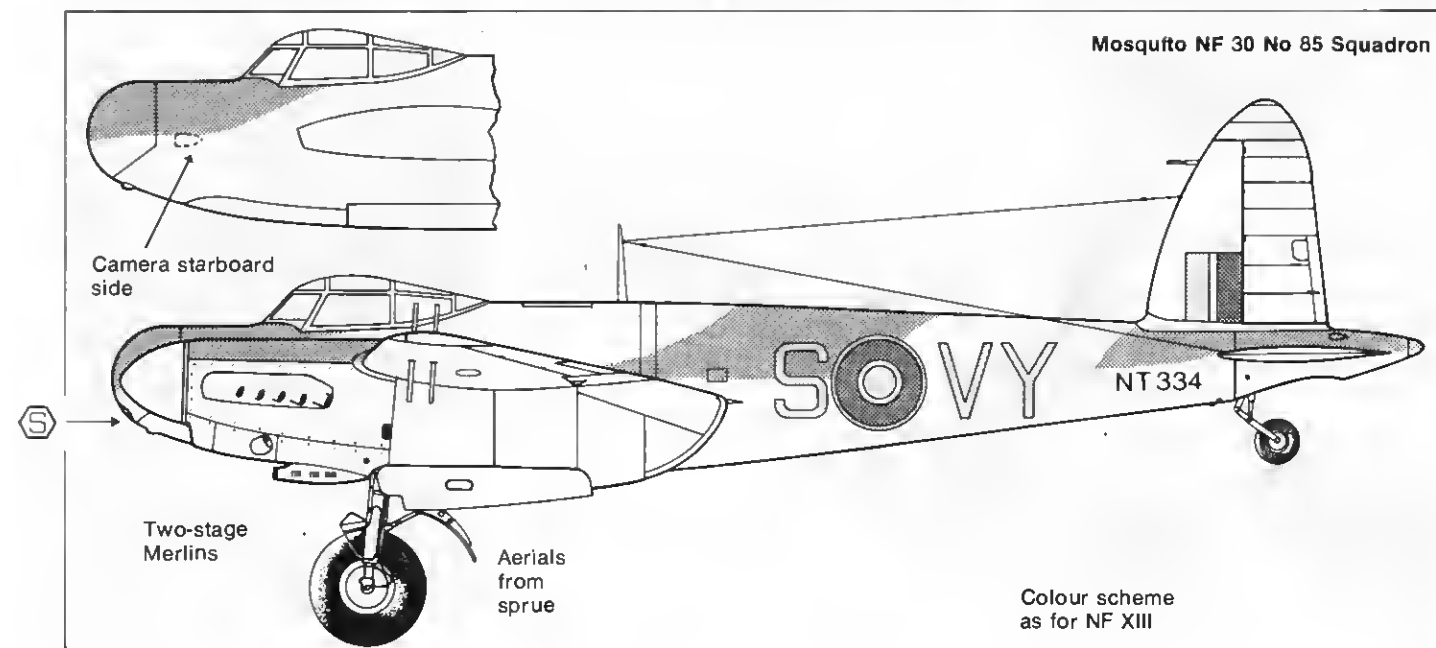
The NF Mk XII followed the NF Mk II into service and this was the first British aircraft to fly with centimetric radar introducing the spinning-dish scanner mounted in the nose. The first Mk XII was DZ859 and this made its maiden flight in March 1943, subsequently 197 earlier Mk XIs were converted to Mk XIs. The Mk XII differed little from the Mk II and retained similar characteristics but it was fitted with 50 Imperial gallon capacity wing tanks. The Mk XII and Mk XIII had their radar scanners housed in a thimble nose but this was later superseded by the bulbous one which became known as the 'universal nose'.

American-designed radar was used in some Mk IIs which became Mk XVIs and the Mk XIX went into production as an equivalent to the Mk XIII but carrying American radar. The last version to see service in World War 2 was the Mk 30 which had Merlin 72 engines and entered service in late 1944 operating from both home and continental bases. The NF 36 was developed from the NF 30 to which it was basically similar except that it was equipped with Merlin 113 engines. The NF 36 and NF 38 were post-war developments which served in the night fighting role with the RAF until the introduction of the Meteor and Vampire night fighters.

The NF XIII is a simple conversion as the only major work involved is the addition of the thimble nose. This can be made in a variety of ways ranging from a new balsa carved unit to one moulded from plastic card, but I found a simple solution was provided by a hunt through my spares box which produced a spinner of the correct diameter. This was cemented to the nose in

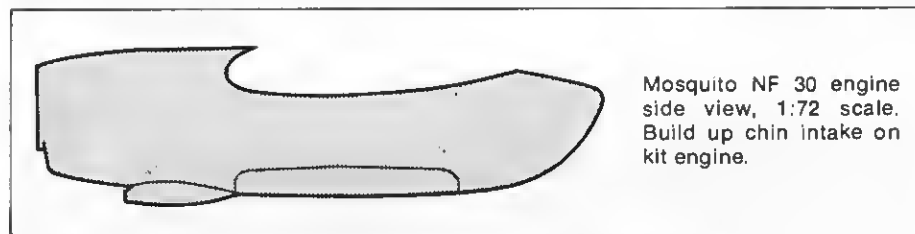
place of part 19 and when it had set firmly was shaped with file and sandpaper to the correct contours. The spinner I used could not be identified but it was too pointed, however the work in reducing the pointed end to the correct proportions was certainly less than it would have been if another method had been used. No work is needed on the engine nacelles as the single stage Merlin 23 was fitted to this aircraft. Aerials were added to the wing tips by drilling small holes and inserting stretched sprue which was held in place with a touch of liquid cement. Propellers of the standard type, parts 27 and 50, were fitted and the model was completed in the markings of a No 29 Squadron aircraft, the dark red codes K:RO coming from Letraset sheet M 13. Camouflage was Sea Grey Medium (HB6) overall with Dark Green (HB1) disruptive pattern on the top surfaces.

To produce a later Mk NF 30 the work involved is a lot more complex as the engine nacelles have to be converted to house the Merlin 72 or 76 double-stage





Aerial painting of No 29 Squadron Mosquito NF XIII as modelled and shown in the accompanying drawings (Martin Holbrook).



Mosquito NF 30 engine side view, 1:72 scale. Build up chin intake on kit engine.

engines with deeper radiators.

There are again many ways of obtaining the correct engine shapes and modellers will have their own preference for doing this. The hardest way is to remove the complete front ends from the nacelles and carve new ones from balsa wood, but I chose the following method which achieved its purpose admirably.

Take a very sharp modelling knife and carefully remove the small intake under the nacelle and put this on one side. Build up a new underside to the nacelle with layers of plastic card and body putty to get the deeper contours shown in the drawing.

When this has firmly set carefully sand it to the correct profile, making sure that the intake is symmetrical about the centre-line. This work must be carried out with the engine nacelle halves cemented together which makes the provision of rotating propellers difficult, but it can be achieved by carefully removing the pins from parts 30 and 52 and cementing these into the backs of the spinners and then locating them in the original holes when the engines are completed. They will not be retained in position and will drop out if the model is handled frequently, so unless you feel it is essential to have rotating propellers,

it is best to cement the spinners direct to the nacelles.

Filler can tend to crumble when the deeper chin radiator is gouged out so to overcome this I found some bombs of the correct depth in my spares box and cut off the nose sections. I then cemented these to the undersides of the nacelles in line with the front and built up the putty around these. It was then possible to clean away the putty and clear any that had filled the new radiator recess. The deeper radiator can also be built by making a rectangular box from plastic card, cementing this in place then building up the outside shape with putty.

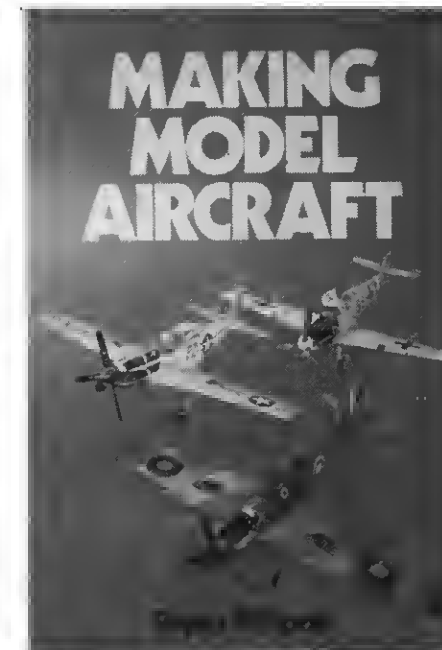
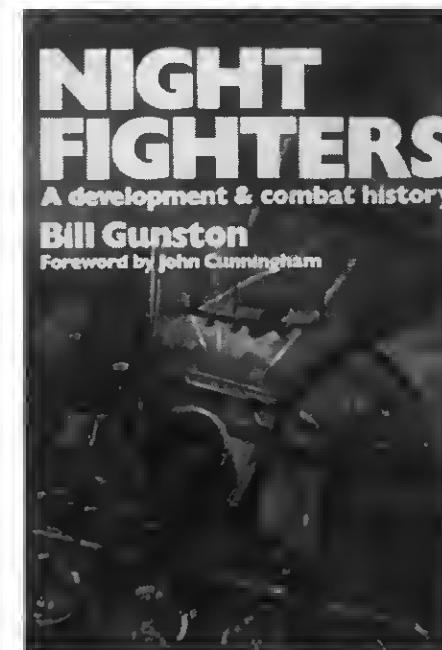
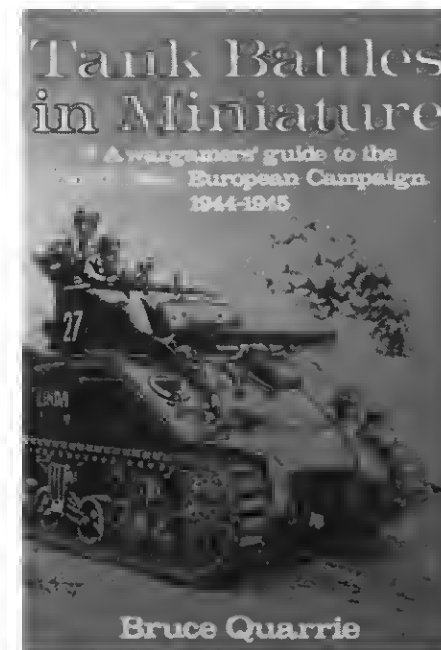
Once the new outline has been achieved and before final polishing, refit the earlier removed intakes in the positions shown on the drawings.

The bulbous nose is fitted by first cutting the fuselage halves on the line provided in the kit for the addition of the Mk XVIII nose, then adding a balsa plug which is carved and sanded to shape after which it is filled with grain filler so that the paint is not absorbed into it. Care in arriving at the correct shape must be exercised since the characteristic flat top forward of the cockpit and the curving line sweeping up under the nose gives the NF 30 its character. Paddle blades, parts 29 and 51, are fitted together with the open exhausts parts 40/42 and 62/64. Slipper tanks are also carved from balsa and cemented in position and finally wingtip aials are made from sprue and inserted through drilled holes.

The NF 30 was finished in the same scheme as the Mk XIII and the codes of No 85 Squadron, S:VY came from the same source as those used on the Mk XIII. The squadron's hexagonal badge containing the aircraft's individual code letter was drawn freehand with a Rotring pen on the front of the nose cone. The rest of the model uses unchanged kit parts.

Having looked at some of the British answers to the night fighter question it is worth considering how the Luftwaffe followed similar lines to combat the threat of RAF Bomber Command, and this oddly enough leads us to a German-designed bomber that also became a deadly night fighter. This was the Junkers Ju 88 which will be covered in part 4 next month. □

Good shot of the author's Mosquito NF 30 conversion showing revised engines, wing slipper tanks, aials and bulbous nose.



Books make great gifts

Tank Battles in Miniature 3: A wargamers' guide to the North-West European Campaign 1944-1945, is the third volume in this popular wargaming series, and will be published this month. Produced in exactly the same style as the previous two titles (covering the Western Desert and Russian campaigns respectively), it contains a concise illustrated account of actual Allied and German operations from D-Day to the collapse of Germany, military organisation details and vehicle and weapon data tables, together with precise suggestions on reproducing these in miniature as wargames. In addition to the usual chapters on terrain, climate, weapons and 'what it was really like', this latest volume also includes special chapters on amphibious assaults, glider and

parachute landings, and naval gunfire support, as well as aerial support and other vital factors. Price is £3.95 from all good book and model shops, £4.37 by post direct from the publisher. **Night Fighters:** A development and combat history, is a thoroughly researched narrative account of the evolution of night fighter aircraft, radar and weapons from World War 1 to the present day. Although technical, this dramatic story is brought vividly to life by Bill Gunston's attention to human as well as mechanical and electronic detail, and well portrays the problems — as well as the exhilaration and terror — of aerial combat in the dark. Dozens of drawings and photos, plus technical appendices, make this book an invaluable contribution to aviation history and a 'must'

for the bookshelves of all aircraft enthusiasts and modellers. Price is £4.50 net, £5 by post.

Making Model Aircraft is Bryan Philpott's sequel to PSL's earlier successful title on model soldiers, *Modelling Miniature Figures*. It is probably the most definitive guide to constructing scale model aircraft from plastic construction kits, balsa wood and plastic card ever compiled, and contains — in addition to several practical modelling projects in anything from 1:144 to 1:32 scale — numerous hints and tips on such diverse subjects as home vec-forming, metal skinning, rigging biplanes, airbrushing and making your own decals. Price is £3.95 net, £4.37 by post.

Luftwaffe Camouflage and Markings is the second volume in this renowned series from Australian publishers Kookaburra, distributed in the UK by Patrick Stephens Ltd, and takes the story of German military aircraft markings from the Battle of Britain to 1943. Lavishly illustrated with dozens of full-colour photos and drawings, as well as hundreds of black and white photographs taken on all fronts, it is probably the most complete guide to this complex subject ever assembled, and is an essential purchase for all students of aerial warfare as well as modellers seeking alternative and authentic marking schemes for their kits. Price is £8.50 (£9.20 by post).

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British Army uniforms

1660-1900

Dragoons and Dragoon Guards 1796 by Bryan Fosten

IN JULY 1796 a Clothing Warrant was Issued which, *inter alia*, described the new pattern heavy cavalry jacket. The coat was to be short-skirted so as to clear the saddle when the wearer was seated on the horse, buttoned down to the waist to cover the waistcoat, and looped, 'as at present' with collars, cuffs and turnbacks of the regimental facing colour. The sleeves of this garment were to be made to button 'underneath the cuffs' to enable the coat to be drawn with ease over the sleeved under-waistcoat. It had shoulder straps in the facing colour and was to have red 'wings' edged with white cord, and laced and reinforced with iron or brass plates to resist sword cuts.

Waistcoats were red with collars and cuffs of the facing colour and the breeches were made of 'plush' (a coarse material with a pile on the outer side). Cloaks were red and made with sleeves, and the hats, now worn across the head, were black felt with a plain cord loop and a white feather. The officers were ordered to wear the same pattern coat as their men but, when they were not on parade, or under arms, they were permitted to wear the old-pattern long-skirted coat with lapels.

There was confusion over the description in the Warrant. It was not clear whether it was intended that the old lapels and double-breasted fronts were to be dispensed with. Consequently for a time some regiments wore the old type of coat

adapted to short skirts and others wore a new single-breasted style. However, the British Military Library prints, the de Bosset diagrams (1803) and the Hamilton Smith notebooks (1800) all show single-breasted type.

The coats differed between the regiments and between the Dragoons and Dragoon Guards and we are fortunate in having several descriptions of coats worn by the regiments under review which more clearly identify the main differences.

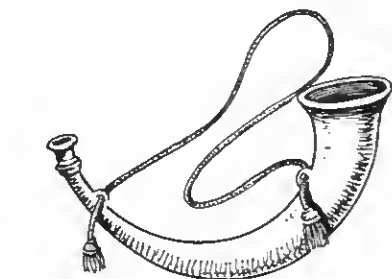
Firstly let us examine the comprehensive Standing Orders of the 2nd Dragoon Guards. If we accept these as being standard for Dragoon and Guard Regiments of the period then we learn that the Sergeant-Major wore three chevrons of the 'facing colour' on the right upper sleeve, that the sergeants wore two and the corporals one. Farrier-Majors wore the same badges of rank as the sergeants. After 1801, of course, proper regulations were issued concerning badges of rank of NCOs and thereafter Sergeant-Majors wore four gold or silver chevrons, the sergeants three white chevrons and the corporals two. In some regiments Sergeant-Majors seem to have worn either Crowns or some Regimental Device above the chevrons.

On foot parades regiments wore 'caps' (these will be described later), with hair clubbed and powdered, regimental coat, waistcoat, breeches, black leggings, black stocks, switches, and gloves if the weather was cold. On Church parades they wore the same except that they carried swords, bayonets, gloves, and wore the regimental feathers in their hats. When under-arms-on-foot the regiment was dressed as for Sundays, but had pouch belts and their arms properly flinted and with no gloves. When on Guard Duty they dressed as when 'under-arms' but always wore the hats. For Field Day Parades on horseback the regiment was dressed as when under-arms-on-foot but with boots and buckled-on spurs and the officers wore 'plain hats'. On Review Days they wore the same as on Field Days but with the full horse furniture.

Arms were issued by the Ordnance Department and consisted of carbines, bayonets, scabbards, steel-rammers, pistols, sabres, trumpets, and semi-circular bugle-horns. Each regiment had a forage-wagon with 'tilt' drawn by four horses and with two drivers.

The following examples of officers' coats are taken either from actual garments or from contemporary descriptions in tailors' pattern books.

6th Dragoon Guards (officer's jacket). Description of an actual garment. Scarlet facelock (a fine smooth-surfaced material like doeskin) with white facings (collar, cuffs and turnbacks). Two pairs of silver, black-striped square-ended loops on each



The bugle-horn carried by both Light and Heavy cavalry at this time.

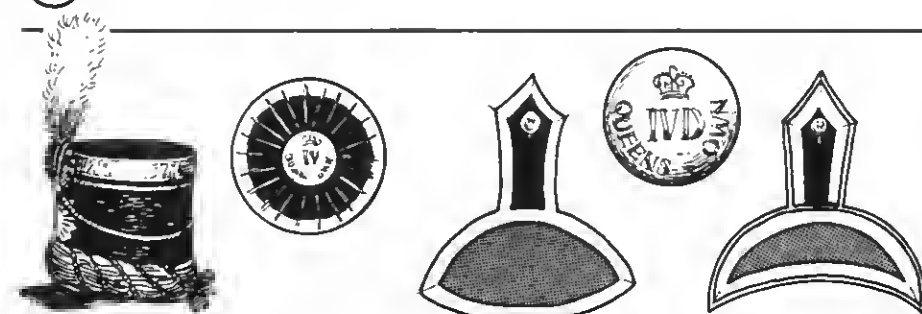
collar-end. Two silver regimental buttons on the right side. Down each fore-part of the jacket four pairs of silver black-striped square-ended loops each sewn on a piece of white cloth showing in the centre of the loops as a 'light'. The whole coat, including the front edges of the fore-parts, edged with a single width of the silver black-striped lace. This lace continues along the edges of the turnbacks terminating in the centre back at waist level with a spear-shaped ornament of lace. On each sleeve two pairs of square-ended silver lace loops in shallow 'Vs' with a silver button at the centre of each, the lower loops actually on the white cuffs. At the waist at the rear two silver regimental buttons sewn on either side of the central spearheaded ornament. Around each button a single width of lace folded into a pointed ornament and then descending vertically to pass behind the inner turnbacks. Each of the twin turnbacks ornamented with an eight-pointed embroidered silver star with a silver regimental button in the centre. On each shoulder a red cloth wing edged all round with the silver lace and with a thin silver wire fringe. The wing totally covered with overlapping scales of silvered iron. An unusual feature of the jacket is that the eight breast buttons are sewn on the edge of the right side of the coat outside the enclosing silver lace trim.

4th Dragoons (an officer's jacket from a description in a tailor pattern book). Scarlet jacket, single-breasted, to button down the front and 'sloped gradually'; green collar, cuffs and turnbacks; two silver vellum square-looped holes in collar with breast buttons on front end; the collar edged with white in front and on top; one hole in sleeves and one hole in the cuff, the cuff edged white; 'flat plaits'; turnbacks faced with silver vellum showing a green and a white edge; not laced on fore-parts; ten silver vellum holes by twos in each fore-part; the top hole six inches and the bottom five inches, in front; a pair of wings made of scarlet cloth with green cloth straps laced all round with silver vellum and edged with white; skirt ornaments a 'rose' of green cloth edged white; a breast button in the middle; the jacket lined with rattinet and with pockets on the inside.

6th Dragoon Guards An unusual sketch exists drawn by Charles Hamilton Smith and preserved in his notebooks in the Print Room of the Victoria and Albert Museum, Kensington. The drawing was apparently executed in Jamaica about 1807 and shows an officer wearing what seems to be an 'interim' or undress jacket. It is double-breasted but closed to the waist and buttoned over to show only the red side. It has small silver epaulettes and a button but no



An officer of the 4th Dragoons, from the portrait of Major C. P. Ainslie described in the text.



Above left A cap of the 6th Dragoon Guards from a drawing by Loftie. This cap is black with silver lace and cords. The turban is blue with silver chain ornamentation. The plume is white over red. **Above** Detail of 4th Dragoons turnback rosette from Welch and Stalker's pattern book. It is made of green cloth edged white with a regimental button. **Centre** The wing, from the same book. Note how it differs from the Hawkes' pattern. **Above right** The button and wing from the Lot 81 book. Both wings have green shoulder straps, red crescents and silver lace. The wing on the right is further ornamented with white piping.

lace loop on the collar front.

4th Dragoons A portrait of Lieutenant Colonel Leighton by Dighton. This drawing shows the officer wearing a coat which closely resembles the tailor's description but has no wings, and two loops on the cuff with only one above on the sleeve. This may be an artist's error although the same detail was noted by the late S. M. Milne in his collection. A later entry in the tailor's book describes a full dress long-skirted coat for the regiment. This coat was worn at levées, balls, drawing rooms and at court. It is described as 'Single-breasted, green collar and cuffs with white kersey-mere turnbacks all edged with white cord. Collar edged all round with white cord. Twelve holes by 2's on the breasts, top holes 8½", bottom 4½", stand-up collar, 2 holes on each end and 7½". "Dragoon side" 4 by 2's, 2 on the back. "Dragoon sleeve" 4 by 2's cuff edged white, lined with white rattinet.' It could be that Dighton has drawn Leighton wearing the full dress coat and that the longer tails are not visible.

4th Dragoons A description by the late P. W. Reynolds from a tailor's pattern book: 'Scarlet, ten laced holes in front by pairs

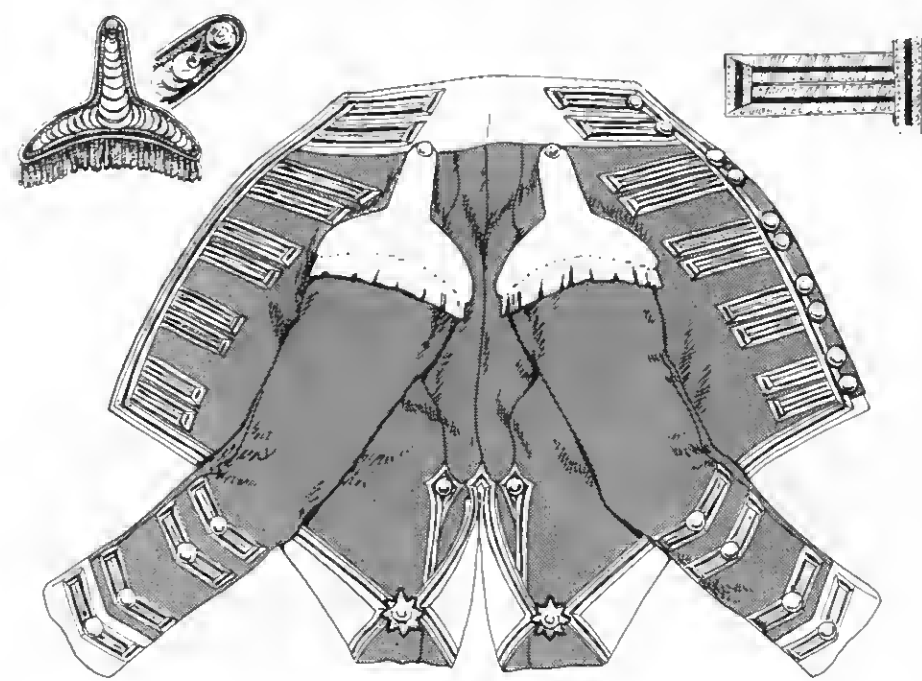
7½" at the top 4½" at the bottom. Green cuff 2½" deep, one laced long hole and one above 2½" apart, the cuff laced all round and up the slit with three points. Green turnbacks laced and edged (lacing not to form part of the buttonhole) side edges and back and side seams edged with white all over and lined with white rattinet, one small button with narrow lace all round for skirt ornament.'

4th Dragoons from a portrait of Major C. P. Ainslie by Reinagle. This beautifully finished and dramatic portrait has been reproduced in W. Y. Carman's book *British Military Uniforms from Contemporary Sources* and is also described by P. W. Reynolds in his MSS notes. The jacket is as described except that, like Leighton, Ainslie has no wings. Instead the coat has narrow silver shoulder cords. The pouch belt is faced with silver with a broad green silk stripe along each edge. The wide, white leather waistbelt has a large rectangular gilded plate in front with some design on it, and the belt has a white slide on the right side. The white breeches are worn in long black boots with buckled-on nickelled spurs. He wears white gauntlets and is carrying

A trooper of the 4th Dragoons from the painting by Scott.

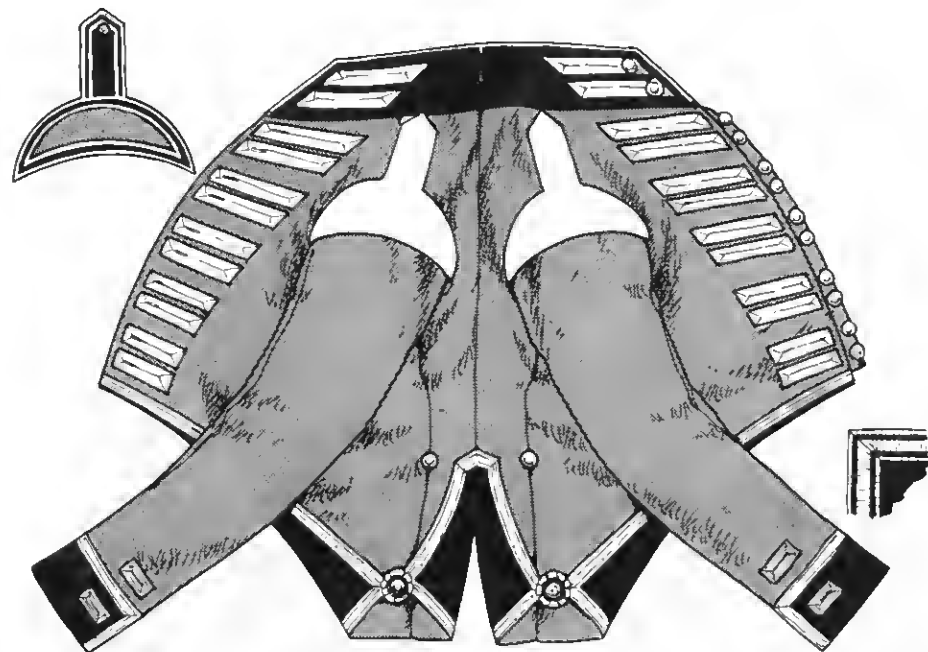


A jacket of the 6th Dragoon Guards from an actual specimen, see text for description.



rying a plain black cocked hat in his right hand. It has a simple silver loop and button and a white feather (possibly with a red root). The saddle is white leather (or covered with white). The elaborate housing is scarlet and is edged with silver lace. Under the leg is a brown leather insert to avoid leg rub. The holster caps are also scarlet and the black bearskin flounce covers the tops. The holster caps are edged with silver lace and have a small gold crown and silver interlaced 'Cs' in the centres. The silver lace on the housings and the holster caps has two green stripes. The head band and the bridle and reins are white leather and the head stall is black. The head band is decorated with red roses.

4th Dragoons Some other items of interest which have been recorded from tailor's records. A white marsilla waistcoat laced with white cotton. A white cassimere waistcoat laced with silver. Both waistcoats with 12 breast silver plated buttons. White web pantaloons laced with Austrian knots and down the sides. Blue overalls, cross pocket flaps with three regimental buttons. The side seams sewn down to the tops of the 'booting' and made to fit tight. The bottom of the 'booting' cut the same size as the top. Hollow before to fit the instep and



A jacket of the 4th Dragoons from Hawkes' pattern book.

round behind to come low over the heel. Black iron buttons on the 'booting'. Steel chain fastened to the bottom of the inside of the legs and taken to the top of the button side. Made to take on and off! Japanned leather boots strapped with cloth. These are the short boots worn under the overalls. (Note that the original wording says 'boots' not booting but has been altered to make the meaning clearer.)

We are also fortunate in having a detailed painting of the 4th Queens Own Dragoons executed by Scott in 1802. This admirable painting, now in the possession of Colonel F. Hugonin, has been reproduced in Vol XXXV page 143 of the *Journal of the Society of Army Historical Research*. The painting shows Troopers in full marching order, a Farrier and a Trumpeter.

The Farrier wears a blue jacket faced with dark green and has white bindings. He wears a fur cap resembling a hussar busby with a white metal horseshoe on the front. He carries what appears to be a poleaxe slung on a white leather shoulder belt over the left shoulder. Behind the saddle he has a brown leather tool-case with a red cloak buckled on top.

The Negro Trumpeter wears a white cloth turban bound diagonally with black or dark green cord. The turban has two plumes, one red and one green although it is not clear whether this is supposed to represent one plume dyed the two colours. The elaborate white jacket has a scarlet collar, wings, cuffs and turnbacks. The loops of lace on the collar, the wings, the foreparts of the coat and the sleeves are trimmed with a yellow lace with a blue line. The trumpet cords are yellow and red and the trumpeter also has a large semi-circular bugle-horn on a dark cord suspended on the back. His white waist-belt supports a sword, no doubt of oriental pattern. White breeches and high black boots complete his costume. The trumpeter's cloak is strapped across the withers in front of the saddle and behind the saddle is a large, dark-coloured case, with a red top, the

purpose of which is unknown.

Details of the troopers' uniforms indicate red jackets with green facings on the collars, cuffs, turnbacks and the wings with white lace as worn on the coats of the officers. The wings are trimmed with white and they wear pouch belts supporting plain black pouches.

The swords are suspended on slings from a wide white leather waistbelt which also carries the bayonet. A blue painted canteen and a large white canvas haversack are worn on the left hip. The canteen is lettered in yellow with the title '4D' and with the troop number beneath it.

The troopers wear black cocked hats with white over red feathers. The hats are worn across the heads and both troopers and the farrier have queues.

As already mentioned, the dragoons wore caps in addition to the cocked hats. Indeed it seems likely that the full dress hat was worn only on certain parades and duties and that at all other times the 'cap' was the normal headdress.

It was black felt and resembled an infantry cylindrical cap. The large flat peak could be worn down, to protect the eyes, or folded up. Some versions are shown with a lace band around the top while others are plain black. Some have cords with or without long pendant cords with tasselled ends. Most seem to have had some form of regimental badge or device on the front. When feathers were worn they were fixed in front in the same fashion as the infantry cap of the period. Officers wore the cap as well as the rank and file.

The overalls described from the tailor's book are shown in paintings to be tight to the leg with buttons or a laced stripe down the outside of the leg. The pockets were usually horizontal and had scalloped flaps with buttons. The leather reinforcements, known as 'boot' or 'booting', were fashioned down the inside of the legs and with a deep cuff around the bottom of each leg. The chains passed under the instep and were looped around the back of the leg.

OT No 5 Squadron RNZAF (c)
Carried by Singapore Ills of this unit in the Far East at the commencement of the war with Japan, eg OT:C-K6917.

OU No 485 Squadron, RNZAF (c)
The first of the RNZAF units in the European theatre in World War 2, 485 Squadron formed at Driffield on March 1 1941 with Spitfire Is and flew 'OU' lettered Spitfires throughout the war. Examples are Spitfire I OU:C-X4678; Spitfire VB OU:L-AA735; Spitfire IXB OU:S-MK245.

OV No 197 Squadron (c)
This squadron was a Typhoon squadron in 2nd TAF throughout its existence, forming at Drem in November 1942 and disbanding at Hildersheim in August 1945. Its aircraft were always coded 'OV', eg Typhoon IB OV:E-MN881.

OW No 426 Squadron, RCAF (c)
Formed at Dishforth on October 15 1942, 426 Squadron became part of No 6 (RCAF) Bomber Group, flying Wellingtons, Lancasters and Halifaxes, transferring to Transport Command in May 1945, where it flew Liberators. All these types were coded 'OW'. Examples are Wellington III OW:M-Z1599; Wellington X OW:C-HE904; Lancaster II OW:U-LL721; Halifax III OW:M-LK796; Halifax VII OW:O-RG459; Liberator VI OW:G-KL670.

OX
Allocated to No 22 OTU but no record of its use.

OY No 608 Squadron
Although complete confirmation has not been obtained, it seems fairly certain that the Coastal Command unit flying Ansons and Hudsons, coded 'OY' was 608 Squadron. Sightings were made in 1942 of Wellington VIIIs coded 'OY' but no record has been found that 608 used this type. Examples are Anson I OY:Y-L7976; Hudson V OY:G-AM659.

OY No 13 OTU (c)
This OTU began to receive Mosquitoes in 1944, flying mainly from Finmere, and used 'OY' codes until merging with 54 OTU in May 1947, eg Mosquito VI OY:G-HJ741.

OZ No 24 Squadron, SAAF (c)
These letters were used by this squadron's Boston Ills in the Western Desert at the end of 1942 and early 1943.

OZ No 179 Squadron (c)
This code was allocated to 179 Squadron in Coastal Command flying Wellingtons circa 1944. It is not known whether the Welling-



Squadron codes and colours 1939-56



By Michael J. F. Bowyer and John D. Rawlings

tons carried this code but when 179 re-equipped with Warwick GR Vs in April 1945, these aircraft were coded, eg OZ:N-PN722. They were replaced by Lancaster ASR 3s in 1946, and soon renumbered 210 Squadron (see below).

OZ No 210 Squadron (c)
Reformed from 179 Squadron (see above) on June 1 1946 at St Eval, its Lancaster ASR 3s were coded 'OZ', eg OZ:T-RE115.

O3 Bomber Command Development Unit (c)
Allocation confirmed, no report of its use.

O5 Bomber Support Development Unit (c)
This unit was formed at Foulsham in April 1944 and flew from there and Swanton Morley with Mosquitoes coded 'O5'.

O6 No 298 Squadron
This code was used by a Halifax unit in Transport Command, possibly No 298

Squadron. Examples are Halifax III O6:S-NA282; Halifax VII O6:X-NA310.

O7
Used on P-47s of the 514th Squadron of the 406th Fighter Group, USAAF.

O8 Station Flight, Merryfield (c)
Used on Ansons of this unit, eg O8:5-AX648.

Top of page The Spitfire took over from all other day fighters as the pure fighter for the offensive over France. Waiting at Redhill's dispersal are pilots of No 485 Squadron with Spitfire VBs in early 1942. OU:Z is AB87? (0 or 6) (IWM). **Right** Anson Is, believed to be of No 608 Squadron in 1941. **Below** Lancaster ASR 3 SW283 of No 210 Squadron at St Eval in March 1951. **Below left** Mosquito PR 16 PF669 of No 58 Squadron (R. O. Hepburn).

20 84 Group Communications Flight (c)

Used on Hurricane IVs of this unit, eg 20:C-PG448.

30 Station Flight, Wrattling Common (c)

Allocation confirmed, no report of its use.

50 No 521 Squadron (c)
521 was a meteorological reconnaissance squadron, based at Bircham Newton from March 1943 to April 1946 and was allocated this code combination. The only known use on its aircraft was on Hurricanes in 1944-45. □



Historex 'home comforts'

Prices are as follows from Historex Agents, 3 Castle Street, Dover, or good model shops: Vivandiere set — £2.10; Vivandiere's cart and horse — £4.20; camping ground packet — £2.10; and troops on the march set — £1.05. If ordering by mail please add 15p up to £8, otherwise post free.

MATCHBOX HAVE produced a very fine example of the B-25 Mitchell in the latest of their three colour 'big' kits. Parts enable

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A GOOD selection of recent 1:35 scale

Continued on page 166

Below Typical 'on the march' scene from *Historex* catalogue sheet No 24 showing a vivandiere with her horse and cart, donkey and dog, with various French Napoleonic troops clustered around. This is just one example of the many diorama ideas which these new releases spark off. **Bottom** Matchbox Mitchell in 1:72 scale.



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 - E. U.S. Navy, F4J Corsair; VF-71, SZD-2, Helldiver, OSZU-3 Kingfisher.
 - F. RAF Hunter F.6, 14 Sqn.; Phantom FG2R, 6 Sqn.; Meteor FA.4, 63 Sqn., and Harrier GR1, 1 Sqn.
 - G. USAF-S.E. Asia RF-101C, F-105D, A-1H and EC-47N.
 - H. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 9-2A 23 TASS, AC-47 432 TFW, USMC OV-10A Bronco, MLM-267.
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 - J. H.33, RCAP, F-35, Danish Air Force, 4 Sqn. for 75 Sqn., RH2AF.
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 - U. Canberra T4, 231 OCU, RAF, Cotswolds, 112 Sqn. Hunter T.4TFS, RAF, 1973 or 1974, 1962). RF-4E Thunderstreak, 117 Sqn. RAF, Coningsby, 1974.
 - V. Buccaneer S2A, 208 Sqn. RAF, 1974 Honington, 1974.
 - W. Canberra E15, 98 Sqn. RAF, 1974. Hunter IR, 764 Sqn. FAA, 1964. Lightning F.3, 29 Sqn. RAF, 1971. Jet Provost TS, 3FTS. "The Swords" RAF Leeming, 1974. (Serials produced to make any one of Team).
 - X. BAC-SEP Jaguar GR1, 14 Sqn. RAF, 1975. BAC-SEP Jaguar T.2, 14 Sqn. RAF, 1975. Rep. RF-4F Thunderstreak, 314 Sqn. Dutch AF, Rep. RF-84F Thunderflash, 717 Sqn. Norwegian AF, L-C-130H. Hercules, 721 Sqn. Danish AF, 1975.
 - Y. G. US-2N Tracker, 320 Sqn. Dutch Naval A/S. G. Javelin FAW.8. Can be finished for either 41 Sqn. RAF or 85 Sqn. RAF, 1963. BAC-SEP Jaguar GR1, 14 Sqn. RAF, 1975. BAC-SEP Jaguar T.2, 17 Sqn. RAF, 1975. Phantom FG2R, 6 Sqn.
 - Z. H. Fury I, K5673, 3 Sqn. RAF, Tangmere, 1937. B Bulldog IA, K2151, 23 Sqn. RAF Kenley, 1932. G. Gladiator I, K8027, 87 Sqn. RAF, Debden, 1938. A.W. Siskin IIIA, J6959, 43 Sqn. RAF, Tangmere, 1930.
 - AA. H.S. Sea Vixen FAN.2 X.P923, 766 Sqn. FAA, May 1968, or 890 Sqn. FAA, Sept. 1968. Additional emblems and serial numbers included also for machines of 890 Sqn., 899 Sqn., and N.A.Y. Sydenham Super Mystere B2, E.C.2/12 "Arme de l'Air" F.2, 1000 Super Sabre, 727 Sqn., R. Danish AF, 1973. Sepeal Jaguar A or E, 7 Esc. L'Armee De l'Air, 74-7.
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Italaerei kits, which are now sold under the Revell label, have recently arrived for review. First out of the box was the Crusader III, cleanly moulded in sand-coloured polystyrene with a wealth of fine detail, including a complete 6 pdr gun breech. No other interior components are provided, but the breech helps to fill the turret interior which is very noticeable if this tank is modelled with hatches open.

Three crew figures are also provided and, for those who wish to bother with such a gimmick, the road wheel suspension can be made to 'work'. The well-produced instruction sheet includes a couple of detail close-up photos of an actual Crusader, as well as photos of the model, while the decal sheet includes alternative markings for three different vehicles of the 1st, 6th or 7th Armoured Divisions in North Africa.

Next out of the review box was the enormous 'Elefant' tank destroyer, another crisply moulded kit which includes a driver and bow machine-gunner together with their seats and other internal detail, and a commander figure. Surface detail is especially good on this model, with the weld marks on the superstructure being particularly well represented. Decals for a variety of vehicles are included, together with three alternative camouflage schemes shown in the instruction leaflet. The Elefant, despite its lack of battle success, certainly ranks as one of the most impressive-looking AFVs to emerge from World War 2, and this kit is guaranteed a large market.

Moving right down the scale, the next box we opened contained a diminutive PzKpfw IB. Both early and late versions of this panzer can be constructed, and a nice touch is the provision of a square of perforated polythene which can be bent round the exhaust pipe to simulate the mesh guard. The big problem is getting this to stay in place, since polystyrene cement won't touch it, and we can imagine many modellers leaving it off in frustration! The kit includes a commander dressed in greatcoat and the early style panzer beret, together with decals for the Spanish Civil War, Poland 1939, France 1940 and North Africa 1942.

Accompanying the PzKpfw I was a PzKpfw 38(t), similarly moulded in dark grey polystyrene. This also contains internal detail in the shape of two front hull seats and a bulkhead, all of which are rather redundant since none can be seen when the model is completed! Construction of the suspension and road wheels is a little tricky on this kit, requiring care. Fortunately, eight spare washers are provided for fumble-fingers.

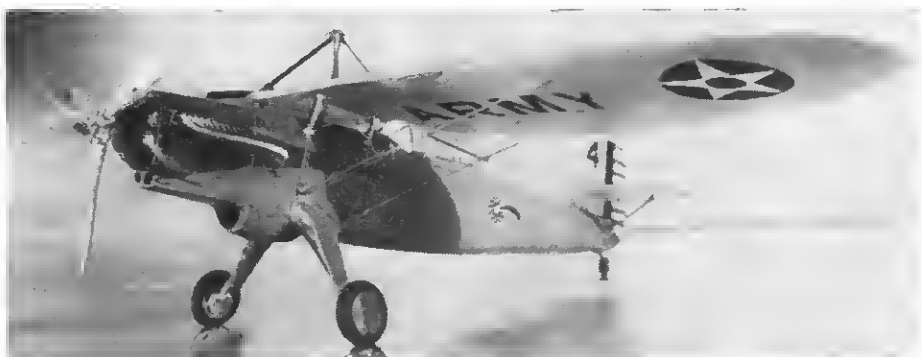
Altogether a good quartet of kits which should prove deservedly popular. Available from most good model shops.

Rareplanes DC 4

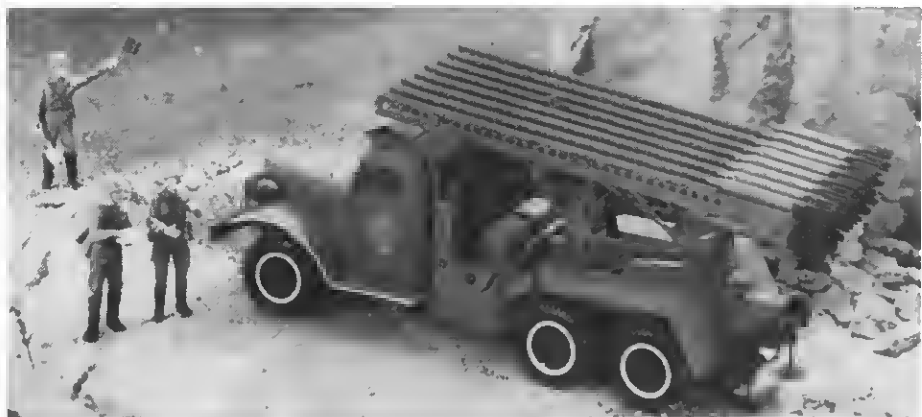
CIVIL/MILITARY transport aircraft in 1:72 scale are very rare birds indeed so it is with considerable delight we see that Rareplanes have followed their Constellation with a DC4.

This kit is another masterpiece in vacuum-forming which Gordon Stevens — the man behind Rareplanes — seems to have mastered to a greater degree than any of his competitors.

The last large Rareplanes kit we had the



Above Rareplanes' Douglas O-43A observation aircraft. **Below** Another recent Revell/Italaerei release was the 1:35 scale 'Katyusha' rocket launcher, which retails for £3.75.



pleasure of constructing was the Fortress and we recorded at that time that this was probably the best detailed vac-form to come our way; this accolade now goes to the DC 4 which in every respect is equal to the Boeing.

Packed in a stout cardboard box, the DC 4 comes on six sheets of thick but workable plastic card which has a good smooth gloss finish. The parts are beautifully formed and surface detail is just right. Control surfaces are nicely indented straight lines rather than the irritating ones that look as though they have been scribed by a drunken centipede that mar so many other kits of this type.

Internal bulkheads as well as a flight deck are included and once the parts are carefully separated from their sheets they go together as well as most injection-moulded kits.

Alternative parts for the Merlin-engined version are included, as are wheels, propellers and undercarriage legs. Most modellers will prefer to obtain the latter components from their spares box, but they are in the kit for those who want them.

It is a great pity that modellers who have been brought up on injection-moulded kits fight shy of tackling a vac-form. It is true that there is more work involved but if this is tackled slowly and carefully it is no more demanding than some of the poorer injection-moulded kits which those who dismiss vac-forms spend hours putting right. The DC 4 needs weight in the nose if it is to stand on its tricycle undercarriage and it is best to hold this in place with Poly-filla or modelling clay.

As with all Rareplanes, the DC 4 is subjected to a limited production run so get in early, and if you are one of the old injection-moulded stick-in-the-muds, why not give it a try and treat yourself to a pleasant surprise as well as helping a

manufacturer who deserves all enthusiasts' thanks for putting the type of model most manufacturers will avoid, within their reach.

The kit is available from Rareplanes, 69 Redstone Hill, Redhill, Surrey, price £4.50.

Rareplanes Douglas O-43

THE CHOICE of the somewhat obscure Douglas observation plane for this vac-form kit might seem a little odd to British modellers. But Gordon Stevens, who produces these kits, has told us that 80 per cent of his production goes to the USA where this particular kit will be received with delight.

It is sufficient to say that this kit is to the same standard that one accepts as normal from this manufacturer, and the clear instructions leave no doubt as to how the well-formed parts fit together.

The O-43 kit contains one set of distinctive 'butterfly' wings but two fuselage choices enabling the Y10-43 as well as the production O-43A version to be modelled. Modifications to the wing centre-sections, and bending of the wing roots, will enable a gull wing to be produced and this can lead to models of the earlier versions in the series such as the YO-31C, O-31B and O-31A.

At £1.20 the kit represents first-class value for money and certainly makes an interesting model for any collection.

AMX 13 and AMX 30

THIS PAIR of modern French tanks in 1:72 scale will probably be popular, especially with modern wargamers, as there are few current tanks in the kit manufacturers' catalogues. Heller are usually to be relied upon to produce a reasonable kit but it must be said that these are not up to modern standards in many respects. For example, there are no teeth on the

sprockets and these, and the roadwheels, are supposed to be cemented on to the ends of very short stub axles.

The tracks are very poor with no guide teeth, just plain ridges and plain outside detail, just straight bars. These could probably be replaced with something a little more authentic-looking but that, of course, is going to put the cost up if you have to rob another kit. A bit of a disappointment but perhaps Heller will improve on these 'toy market' kits and come up with some decent scale models. Wouldn't some World War 2 French tank kits sell?

Matchbox Bf 110D-2

FOR SOME TIME collectors of Luftwaffe aircraft have had to use the Airfix Bf 110 which is now rather long in the tooth, or the Frog version, which is a G variant, to represent this twin-engined heavy fighter. Matchbox has now gone some way towards enabling a fairly accurate model of this aircraft to be produced with the introduction of a D2/C3 version in their Series Three range.

Generally the kit is good but there are one or two irritating errors. Surface detail, which is always the first area that serious modellers tend to look at as far as this manufacturer is concerned, is happily acceptable, the absence of the over-deep engraving which mars so many Matchbox kits being noticeable. In the case of the 110 it is replaced by finely etched raised lines and slightly overscale indentations for the control surfaces which are not too obtrusive once the paint has been applied.

The nose is too curved along the bottom line and ends rather bluntly but can be corrected with careful use of wet and dry paper. The leading edges of the rudders have too steep a curve above the centre line and their bases should be flatter, the trim tabs are also incorrectly proportioned so should be filled and rescribed. Cockpit detail is a little sparse and the instrument panel should have its two large dials and six small ones filed off and painted correctly. The top line of the engine cowling when viewed in plan form is far too wide at the rear and inspection panels are engraved in the wrong positions.

The D-2 had twin machine-guns in the rear cockpit but only one is included in the kit. However, the centre line ETC bomb rack for this version is very good.

Markings are adequate but it is in this department that Matchbox have made a major mistake. This is on the D-2 machine for which markings for an aircraft of ZG1 are provided. The code letter 'C' indicates a 11 Gruppe Staff aircraft in which case the individual letter 'T' should be green and not blue, the latter colour was used on Geschwader Staff aircraft which would have carried a final code of 'A' in place of the 'C'. On the same aircraft the area of yellow behind the nose Wasp emblem is not sufficient, this did vary from aircraft to aircraft but the one depicted by Matchbox has been well documented so this and the colour of the code letter should have been correct.

The alternative markings for the C-3 are for 6/ZG76 in France 1940 and are adequate if a little conservative.

With some work this can be made into a presentable Bf 110 but there is still a gap for a definitive model of this famous aircraft.

NEWS FOR WARGAMERS

SIMULATIONS PUBLICATIONS INC continue to expand their range of boardgames at an impressive rate. Their ability to do so is at least partly due to the degree of standardisation they have achieved. This standardisation is evident on several levels, one of which can be seen in the use of a basic set of rules on which can be built a great variety of games. The basic rules are in turn on several levels of complexity. Once a player has grasped the principles behind the rules at any level it becomes possible to quickly learn how to play any other game designed from the same basic rules. This is the stated aim of SPI's QuadriGame series which are all at a very simple level. This entire series concentrates on the overall impression of the subject battles at the expense of tactical accuracy. Sometimes this proves irritating to the experienced wargamer but occasionally the system works so well that the most detailed and complex version of the same game would not work any better. This could be said of the QuadriGame under review here. The subject is the Thirty Years War and the review will also cover the game Breitenfeld which was issued with *Strategy and Tactics* magazine No 55 or which can be bought separately.

The period we are concerned with here is the first half of the 17th Century and particularly the age of matchlock, pike and sword as used by the European armies then. It was a time of experiment and development, the dawn of modern warfare when the ponderous formations of an earlier age gave way to the still valid concepts of firepower and mobility. To Sweden's Gustavus Adolphus goes most of the credit for these innovations although it is probable that he was building on the foundations laid by the Dutch Maurice of Orange. Holland, however, was a maritime nation and its energies were directed towards its navy, leaving Sweden the focus of attention on land at least for a time.

To understand how a previously insignificant army could so influence history it is necessary to look at the organisational changes made by Gustavus. The accepted practice was for infantry to be formed in solid squares of about 1,500 pikemen with a similar number of musketeers divided into four blocks, one at each corner of the square of pikes. It was an excellent formation for all-round defence and virtually impregnable, but it was very slow moving. Moreover, the frontage of musketeers able to fire at any one time was clearly limited when they were drawn up 12 or 18 ranks deep. Gustavus formed his infantry into battalions of 600 men, three to a brigade. This gave greater flexibility and mobility. He also reduced the depths of the musketeer ranks to six and later three. To further increase the infantry's firepower, each brigade was given a

pair of light cannon.

Changes in the cavalry arm were less sweeping but just as effective. The largest cavalry formation in most armies was the company, several of which would be lumped together on an *ad hoc* basis on the battlefield. Gustavus formed permanent cavalry regiments so improving morale and standards of drill. He also discouraged the use of the pistol as a cavalry weapon and trained his troopers to charge with the sword whenever it was possible.

The Thirty Years War game represents the differences between the Spanish and Dutch or Swedish systems simply and effectively. For each unit fielded in any battle there is a cardboard counter printed with its type (cavalry, infantry or artillery) and its strength. The combat strength of a unit is based very roughly on its size — one point per hundred men. The side using the Swedish system will have more counters but of lesser strength than an equally sized opposing force. They will also have a greater movement allowance. The resulting advantage is perhaps not evident to anyone without experience of such a situation but nevertheless it exists.

Anyone who has wargamed a Pike and Shot battle will be aware of the difficulties of representing the interaction between musketeers and pikemen. The Thirty Years War game overcomes the difficulty at a stroke by not attempting to define the differences between the two. The game assumes that each unit is a proper balance of musket and pike trained to perform the necessary evolutions for effective attack or defence until disrupted by combat or morale considerations. To cover this eventually the counters are printed on the reverse with a reduced combat strength. When a unit becomes disrupted it is simply turned over. In this state it may not attack and its combat value is halved. It has a slightly increased movement allowance which, because players tend to remove these vulnerable units to the rear, causes an appearance of hasty and disorderly retreat apt enough under the circumstances. Disrupted units which suffer a further disruption result are eliminated. This doesn't mean that every last man is necessarily a casualty but that the unit ceases to exist as an effective fighting force. Disrupted units may be restored to order by a dice throw except when the entire army has become demoralised through the loss of a certain number of strength points.

An important feature of the period was the total lack of manoeuvrability of the field artillery. Once positioned on the playing map artillery cannot be moved. It can, however, be captured and used *in situ* by the enemy with disturbing results. Leadership, as always, played an important part and the senior officers of each side are represented

by leader counters. They are used to augment combat values and as an aid to restoring order to disrupted units. They may be killed to the detriment of an army's morale.

The field armies of the time, even under Gustavus, tended to be drawn up for battle in a stereotyped fashion, infantry in the centre and cavalry on either wing. The cavalry would not be of much use against unshaken bodies of pikemen and it was usual for the commanders to launch one or both wings against the opponent's cavalry while the infantry advance in the centre. This tendency is forced on the players of the game by allowing cavalry units only about a half of the combat value of infantry units. Until the infantry become disrupted, cavalry units can only be safely used against other cavalry, unless they are able to surround an isolated infantry unit.

This leads us to consider another aspect of pike and shot tactics, that of the need for an unbroken line. The combat results table devised for the game call for an enemy to be considerably outnumbered to bring about a reasonable chance of success. This causes the players to strive to maintain their own continuous line while attempting to break the enemy's or to get around his rear, thereby permitting single enemy units to be attacked by two or three opposing units. Thus the intelligent use of movement allowances, combat results tables, combat values and the disruption rule combine to give a good simulation of 17th Century warfare in a most simple and satisfying manner.

Thirty Years War can be obtained from Simpubs Ltd, Crown Passages, Hale, Altrincham, Cheshire, priced £5.75.

Operation Warboard, by Gavin Lyall. A&C Black Ltd, 35 Bedford Row, London WC1R 4JH. Price £3.90.

AS A GREAT enthusiast for Mr Lyall's novels, I approached this book with a good deal of interest and was not disappointed, although it is written at a fairly simple level for newcomers to wargaming.

Essentially it is yet another volume on World War 2 games using 1:76 scale figures and vehicles, but contains an exceptionally clear introduction which explains the differences between alternate and simultaneous movement (either can be used with the author's rules), ground and time scales, etc. This is followed by three chapters on building up armies and tabletop terrain, plus a section on building machine-gun and artillery grid devices and a shellburst circle. Then there are some descriptions of sample battles, an explanation of the playing rules, and the rules themselves, very clearly indexed and easy to refer to.

Although simple (for example, all tanks are classed as either 'fast', 'average' or 'slow') the rules are quite lengthy because they go into great detail, leaving very little to cause controversy in the middle of a game. Provision is also made for use of aerial support and amphibious landings, enabling complete 'combined ops' games to be played.

Altogether a useful book, although containing little 'new' for the experienced player, and as a primer on this period perhaps rather expensive (in comparison with, say, *Airfix Magazine Guide 15: World War 2 Wargaming*).

BOOKS FOR MODELLERS

Modelling

How To Go Plastic Modelling, 4th edition, by Chris Ellis. Patrick Stephens Ltd, Bar Hill, Cambridge, CB3 8EL. Price £3.95.

LITTLE CAN be written about this famous book which hasn't been said before! The first, and still in many ways the most definitive book on practical plastic modelling, it has now been thoroughly revised and updated for the fourth time, with an attractive new full-colour jacket. Hints and tips on all forms of modelling, plus numerous conversion examples, plans, sketches and photos, make it a 'must' for every serious modeller. For those readers who possess earlier editions, it also contains one 'new' conversion, the popular Gloster Gauntlet, reprinted from the same author's *Advanced Plastic Modelling* which has long been out of print.

Aircraft

Night Fighters: A development and combat history, by Bill Gunston. Patrick Stephens Limited, Bar Hill, Cambridge, CB3 8EL. Price £4.50.

THE STRIKING jacket illustration on this new book well sets the scene for its contents, which relate the thrilling story of aerial combat by night from World War 1 to the present day. Showing a Messerschmitt Bf 110 climbing to attack a Lancaster from the rear, it puts you right 'into the cockpit', and Bill Gunston's superb text keeps you there.

Surprisingly, the story of the development of night fighting aircraft has never been properly told, so this volume will fill a real gap on the shelves of all serious aviation enthusiasts, while at the same time it is a sufficiently dramatic tale to hold the attention of even those readers whose real interests lie elsewhere.

Beginning with early British attempts to down German Zeppelins and Gotha bombers during World War 1, the book describes the problems of flying at night before proper cockpit instrumentation, flare paths, ground-to-air communications and navids became available, and well illustrates the courage and skill of the early aviators on both sides.

The fascinating story of inter-war developments, with special emphasis on radar and communications, is then related, clearly showing the problems involved in creating workable radar sets both for long-range detection from the ground and for airborne installation. It is interesting to note that the impetus for this research, in Britain at least, came initially from a search for a 'death ray'.

The book then moves into World War 2, and describes the heroic but largely unsuccessful attempts of British night fighter pilots during the Blitz, flying in hopelessly inadequate Hurricanes, Blenheims and Defiants; the introduction of the

Beaufighter, which ended the 'crisis by night'; and the eventual carrying of the night offensive over Germany itself. Night fighting failures, such as the Turbinlite Havoc, and successes, such as the famous Mosquito, are described in detail, as are their German counterparts, in particular the Bf 110 and Ju 88.

The development of centimetric AI radar — one of the decisive weapons of the war — is also recounted, and its eager adoption by the Allies. The scene then shifts to the Far East, with descriptions of American types like the Black Widow and Twin Mustang, and their Japanese opponents.

Finally, there are sections on the Korean War and developments from then until the present day, taking in such well-known aircraft as the Sabre, Scorpion, Javelin, F-106 and Phantom as well as the modern generation of F-14s, F-15s and MiG-25s. The complexity and capabilities of modern airborne detection and homing apparatus and guided weapons are forcefully brought home.

Throughout, as well as relating the actual development of special aircraft, explaining the problems of night interceptions, and describing some of the specialised weapons (such as Schräge Musik) also introduced, the author weaves a dramatic picture of night fighter tactics, and well conveys the exhilaration and terror of aerial combat in the dark.

The book includes a foreword by Group Captain John Cunningham, perhaps the most famous night fighter pilot of them all; a glossary of technical terms; an appendix listing all major night fighting aircraft types, with descriptions and selected data; a photo section illustrating most of the main types described; line drawings which help explain how radar works; and scale profile views of selected aircraft showing radar and weapon installations.

This thoroughly researched volume will also appeal to modellers interested in building up a thematic collection of night fighter models as described in Bryan Philpott's current series of articles in this magazine.

Night Intruder, by Jeremy Howard Williams. David & Charles Ltd, Newton Abbot, Devon. Price £4.95.

THIS IS A personalised account of the life of a wartime night fighter pilot. After a tour with John Cunningham and 604 Squadron, the author became a Flight Commander at the Fighter Interception Unit which developed radar and its tactical application for the night fighter force.

This book is the first to come up with a good story about FIU and contains much of interest about the unit and its activities. It covers intruder work over the Continent, the battle against the flying bombs by day and night, and plenty about the work of FIU.



The photographs are interesting, particularly one of the captured Me 410 TF209 flying alongside a Mosquito XVII, itself of some interest since it is a hybrid with a 'Bull nose' and AI Mk X.

In short a book well worth reading.

Ground Attack, by Christopher Chant. Almark Publishing Co Ltd, 49 Malden Way, New Malden, Surrey KT3 6EA. Price £2.50.

THIS ATTRACTIVELY produced book is the first title in a new series from Almark entitled 'The Mechanics of War', and deals with ground attack tactics by fighter-bombers, dive bombers and the like during World War 2.

Unfortunately, despite a wealth of black and white photographs and some pleasant colour paintings of representative aircraft by Keith Moseley, the text is too short to give more than a very superficial picture. The author devotes a great deal of space on the ground attack policies of the four major combatant nations during the war, Germany, Russia, Britain and America, leaving his descriptions of the actual battlefield tactics and methods of controlling air strikes very skimpy indeed. Surprisingly, too, there is very little information given on the various aircraft types deployed, and hardly anything by way of critical analysis or 'hard' data on their relative effectiveness. Similarly, only a minimal amount of space is devoted to the various special ground attack weapons developed during the course of the war, and no mention at all of such things as the experimental German recoilless aircraft guns. There are, however, some very clear and useful diagrams illustrating ground attack tactics.

In short, it is difficult to see at whom this book is aimed; it is too superficial for the serious military or aviation historian, and although perhaps a useful 'primer' for a more detailed study, is an expensive way of learning little new. Wargamers will find the diagrams useful, but that's about all.

Republic F-84F Thunderstreak, by Paul A. Jackson. Aviation News Warpaint Series, 2 Sheepfold Lane, Amersham, Bucks. Price £1.10.

THIS MONOGRAPH is the first to be published by Aviation News in a proposed 'Warpaint' series. Aviation News, which is edited and published by Alan W. Hall, who needs no introduction to readers of this magazine, has, since its inception included a centre-spread of drawings of varying qualities (mostly good) under the title 'Warpaint', and it seems that the idea is now to extend this to much deeper coverage in this series of monographs. This is a commendable idea and one which will be welcomed by serious modellers as well as aviation enthusiasts in general.

The author sets out to tell the story of the F-84F with no trills and the result is a stark text which achieves its aim but at times becomes a little stilted. Printed on good quality paper with a wide selection of interesting photographs, the monograph does represent good value for money, but there are one or two irritating 'literal' errors which should have been picked-up at the proof reading stage.

The centre-spread of 1:72 scale drawings are clear and well done but the tone drawings do, in some cases, look very cluttered and take a lot of close study to sort out the

mass of information included. In respect of these, some show very untidy aircraft coding, and one is left to wonder if they are truly authentic and the aircraft was painted in this way, or if the artist was too lazy to find the right style Letraset or, in the absence of this, draw the codes with a pen and instruments. In the motor car industry this would probably be classed as a five o'clock Friday model!

Apart from the minor criticisms made above, Alan is to be congratulated on his enterprise and we look forward to seeing the follow-ups, which we are told will cover the BAC Lightning, HS Gnat, F-104 and Bristol Britannia.

Survival In the Sky, by Ralph Barker. William Kimber Ltd, Godolphin House, 22A Queen Anne's Gate, London SW1. Price £4.75.

RALPH BARKER is an author who has the essential knack of making his reader feel part of the story he tells. His latest book is a collection of 15 stories of aerial incidents in which the participants survived to relate their unnerving experiences.

The book makes captivating reading and underlines the hard to define but essential ingredient of airmanship that every flyer must possess. A mixture of civil as well as military stories places the reader in the cockpit alongside the crews of the aircraft concerned, and those of us who have flown as aircrew cannot help but reflect how we might have reacted to the situations which faced the people in Barker's stories.

If you want a break from the repetitive TV shows that now seem to grace our screens, or a short story to read whilst waiting for parts of a model to dry, this is the book for you. But it is easy to become totally absorbed in the Berlin Airlift, a wartime ferry trip across the Atlantic, or share the anguish of a Sea Vixen pilot as he tries to extract his trapped observer, as well as many other equally exciting stories, to the exclusion of everything else. This book is recommended to all who like factual stories and not only the aircraft enthusiasts among this magazine's readers.

Sunderland at War, by Chaz Bowyer. Ian Allan Ltd, Terminal House, Shepperton, Middx. Price £4.95.

IAN ALLAN'S popular series describing aircraft at war has now been extended to include the Sunderland, and as one would expect author Chaz Bowyer has told the tale of this elegant machine very well indeed.

There are many who rue the day the flying boat became a thing of the past and they, together with others who might well have been too young to have seen the always awe-inspiring sight of a flying boat surrounded in spray, will soon find themselves encased in another world as they leaf through this well-produced book's pages.

Profusely illustrated by photographs which give credit to the author's industry in collecting them, the book gets over the atmosphere that surrounded the Sunderland and produced a special breed of airmen-cum-sailors who flew and serviced them. Modellers who look to dioramas for their pleasure will find no end of ideas and those who like to make their models in a

weathered service condition, will also find much worthy of close scrutiny.

In many ways this is probably the best so far of the 'At War' series, since it combines a readable text with illustrations that in most cases are unique, whereas some of the others, although equally as readable, did include a substantial number of photographs that had seen the light of day before. Well done Chaz Bowyer and Ian Allan, how about the same treatment for the Catalina?

World War II Aircraft, by Christopher Chant. Orbis Publishing Ltd, 20-22 Bedfordbury, London WC2. Price £4.50.

THIS IS A disappointing book with a misleading title, as it features only some of the aircraft featured in World War 2. This might sound as though it is 'nit picking' but after all a title is a title and should give a more accurate guide as to the book's contents.

Most of the text is old hat, but then what is there new to say about the design and combat histories of the aircraft concerned, especially in a book that does not set out to relate in any detail the combat histories of its subjects?

Featuring well-known aircraft used by the British, French, Germans, Italians, Japanese, Russians and Americans, the book is an expensive guide to information that most readers will already have. The author's choice is also a little odd, for example in the British section we find the Mk V Blenheim or Bolingbroke but not the Wellington or Stirling, both of which surely rate higher claims for inclusion than the aircraft mentioned.

The colour drawings are poor and most of the photographs, with the possible exception of the colour ones, are the old familiar ones on parade again. At £4.50 the book is not expensive by modern standards, but this must be viewed in relation to what you get for your money, and Christopher Chant's book is therefore not a worthwhile expenditure.

Fighters 1914-19, by Kenneth Munson. Blandford Colour Series, Blandford Press, Link House, West Street, Poole, Dorset. Price £2.10.

SINCE the introduction of *The Pocket Encyclopaedia of World Aircraft in Colour* in 1966, the Blandford Colour Series has expanded to 14 volumes and sold over a million copies.

The latest work in this series to reach us covers attack and training aircraft of the 1914-1919 period and it follows the same familiar format as before. A readable introduction is followed by colour plates showing 80 aircraft, each containing essential dimensions and specifications, and the book is concluded by longer descriptions of these types.

In many respects the illustrations are of limited use to scale modellers, but they are of general use and could lead to inspiration and a further quest for more details.

A particularly useful section in this volume has been contributed by Ian Huntley in which he ably describes the various paints used, and puts this well aired subject into perspective.

If ancient colourful biplanes, and some monoplanes, are your cup of tea, then £2.10 will give you a book full of ideas which can be turned into practical use on dark winter evenings.



Military

War, by Albert R. Leventhal. Hamlyn, Astronaut House, Feltham, Middlesex. Price £4.95.

THIS BOOK is one that sets out to record the face of war as seen over the years through the eye of the camera. Obviously it is thus a book of photographs alone showing the many faces of war from the first photographs of the Crimea right up to the Vietnam conflict. The result is a book that is disturbing, interesting and worthy of study.

The selection of photographs means that inevitably some of them are familiar. In some cases this cannot be avoided, the Fenton Crimean photographs being a case in point. But many magnificent pictures are new to this reviewer, especially some from the Vietnam section — some of these are truly awe-inspiring.

There are sections on all the major conflicts from the Crimean and American Civil Wars, and including some minor wars such as the Spanish-American War. There is even a section on the British Colonial Wars from 1882-1902. Then follows the Great War, World War 2 and all the many wars since.

The result may seem depressing at first sight but the quality of photographs selected ensures that, despite the futility of war, something has survived that is above the misery and destruction depicted. One just cannot regard this work as a chronicle of horrors, although there are many horrors in its pages. It serves mainly as a reminder of what war is about, and it also shows that war is conducted and waged by people, and the faces of the people in this book show the true cost of war in a way no words can describe.

If there is any criticism of this book it is in the short text that introduces each section. Many will find this text shallow and too basic for its purpose which is to outline the causes and course of the conflict to be covered. But the photographs are the strength of this book, as they should be. It is a pity that some have been spoiled by printing over the centre fold, but most are well reproduced. If you can, get this book.

Military Headdress, 1660 to 1914, by Colonel R. H. Rankin. Arms and Armour Press Ltd, 2-6 Hampstead High Street, London NW3. Price £4.95.

I AM AFRAID I was disappointed with this volume of headdress. The potential suggested by the subtitle 'A pictorial history of military headgear' failed to come up to expectations. The book can hardly be judged a 'coffee table' edition as all the pictures are in black and white. It can hardly be classed as a work of reference of any depth as it only skims the surface of this particular field.

There are 230 photographs of caps, hats, shakos and helmets, being representative of many styles of headcovering for some of the armies of the world. The photographs are reasonably well produced and the captions are adequate although there are inconsistencies in the information they contain. Several of the photographs are printed back to front and at least one pair are printed on the wrong page, being transposed in date order. Two captions are transposed, and these mistakes, I consider,

are not good enough in a book of this price, printer's errors or whatever.

The serious collector will very quickly pick up these mistakes, of course, but beginners might well accept the information as fact.

The headdress shown are beautifully preserved specimens and would not normally be seen other than in a book such as this. Which makes it a great pity that a little more care was not taken in its production.

Armour camouflage and markings, North Africa 1940-1943, by George R. Bradford. Squadron/Sigal Publications, 3461 East Ten Mile Road, Warren, Michigan 48091, USA. Price \$9.95.

THIS IS AN American reprint of the original title first published in the UK by Arms & Armour Press in 1974, and if any of our US readers saw the rave reviews which appeared at that time they should lose no time in ordering a copy now. Solidly packed with stunning full-colour art work depicting American, British, German and Italian vehicles to a constant 1:48 scale, with colour patches, tactical and divisional insignia, etc, in addition to dozens of photos and a short descriptive text. If you want authentic colour schemes for your models there's no point in hoping you can borrow this book from your library whenever you want it, because it'll be out on loan to someone else! So buy a copy yourself. It's well worth the investment.

World Uniforms and Bettles, 1815-1850, by Philip Haythornthwaite. Blandford Press, Link House, West Street, Poole, Dorset. Price £2.75.

THIS LATEST edition to the ever-growing range of military books by Blandford covers the least popular period of military costume. It is possibly the most colourful and flamboyant of all in uniform decoration but the author has carefully avoided the 'hackneyed' units. All the illustrations are keyed to world battles and skirmishes which took place during this time showing the full dress and active service dress of 27 armies of the world.

The author is fast becoming well known as a careful researcher and writes with authority. The 132 illustrations by Michael Chappell are clean, clear and unfussy, based on recognised sources of information making this a book that is necessary as an addition to any collector's library.

Blandford are to be congratulated on keeping this series to such a high standard and it is of note that Philip Haythornthwaite and Michael Chappell have now collaborated in four titles for this publisher.

Fiction

The Shepherd, by Frederick Forsyth. Hutchinson Publishing Group, 3 Fitzroy Square, London W1P 6JD. Price £1.50.

THIS IS Frederick Forsyth's fourth book, and is quite different from the other three bestsellers. Basically, it's the story of a Vampire pilot returning home from Germany on Christmas Eve. On the way back, things start to go wrong... (I won't tell any more as it'll spoil the story!). Although it's really a short story, being only 54 pages long, it's a good read, and is well-written by a master story teller. Well illustrated with drawings by Chris Foss.

Contributions

Letters to the editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

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Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor or Airfix Products Ltd.

Figure painting

I KNOW that nothing could possibly be 'boy proof' but I find that after painting your excellent model soldiers, using Airfix paints as recommended, the paint chips off rather easily. Could you therefore suggest a technique whereby I could make the paintwork a little more durable?

Robert Arnold, Warley, West Midlands.

MR ARNOLD'S letter is typical of many which I receive on this subject. Unfortunately, the flexible polythene in which Airfix 00/HO and 1:32 scale soldiers are moulded does not provide a good 'key' for any type of paint. The solution, fortunately, is fairly simple: first wash the figures thoroughly in a solution of washing-up liquid to remove all traces of grease, then dry them thoroughly. Now undercoat the figure, either in polyurethane varnish, or in white glue, such as Unibond. Paint it the appropriate colours, then give it a top coat of varnish. The varnish not only protects the paint, but in particular stiffens the more vulnerable flexible parts. Ed.

Frog Penguins

WITH REGARD to Vagn Engholm's letter about Penguin kits, the matter of the red striping is, I think, a rather hoary old fiction which tends to get perpetuated, along with a few other things. Ian Huntley, in a recent issue of *Aircraft Illustrated*, got nearer the mark by quoting contemporary instructions on colours which were yellow and black. If Mr Engholm wishes to have a pre-war scheme then he could use the 800 Squadron *Ark Royal* scheme of a red/blue/red band with numbers in white which is attractive and authentic.

Regarding the canopy on the Empire Class boat, I am afraid there is nothing to be done except make another. One method



LETTERS TO THE EDITOR

which I have used very successfully is to use the existing canopy as a male mould. It should be filled with Plasticine and, before pushing through the female mould and heated acetate sheet, should be smeared with vegetable oil.

The photo of the Singapore was quite interesting, although the accuracy of some aspects of the Penguins was not all that great, but it should be remembered that they were produced for a very different market in those days. If Mr Engholm is thinking of renovating the Singapore he might do well to wait a while for I have spent several years researching this boat and the result will be a very detailed drawing with many features in a forthcoming issue of *Scale Models*.

Harry Woodmen, London.

NZ exercise

RECENTLY in New Zealand there was an exercise between the nations of ANZUS (Australia, NZ and America) named 'Triad' in the Waiouru and Ohakea areas of North Island, with troops and aircraft from all three countries taking part. 'Triad' was the first ANZUS-sponsored ground-air exercise conducted in New Zealand.

The US contingent comprised an infantry company from the 25th Division, based in Hawaii, a Special Forces detachment from Fort Bragg, Northern Carolina, six F-4D Phantoms, a C130 Hercules from the 18th TFW and two C130s from the 374th TAW. Australia provided an infantry company, DHC-4 Caribous and Iroquois helicopters.

The New Zealand army contributed two infantry battalions, an SAS squadron, artillery, armour, engineers, signals and logistic support, while the RNZAF provided strike and transport aircraft, including A-4K

Skyhawks, C130s, Sioux and Iroquois helicopters, and some Bristol Freighters.

I enclose a photo of one of the latter, serial NZ5907 (in black) which might make an unusual model using the Airfix kit. Camouflage was dark green/medium green/tan, this extending right under the fuselage. Wing under surfaces were a colour very similar to RAF World War 2 Sky. Spinners were camouflaged and propellers had natural metal blades with yellow tips. Some modifications will be required to the Airfix Bristol Superfreighter kit, notably the fin/rudder and undercarriage leg fairings. Chris Small, Lower Hutt, New Zealand.

Zulu War

I AM AFRAID I cannot let comment pass regarding your review of the Osprey book on the Zulu War in the September issue. Although the book is well produced, it contains a number of minor errors, of which I will mention one or two for the guidance of modellers.

First of all, the surprising statement is made that the 91st Highlanders were a

killed regiment but wore tartan trousers during the Zulu War. In actual fact the 91st did not adopt the kilt until after 1881, on becoming the 1st Battalion Argyle & Sutherland Highlanders. Prior to this they wore tartan trousers which had been adopted in 1864 along with a diced shako and Highland doublet in place of the normal line uniform which had been worn for many years. The 91st did not wear yellow patches on the tunic or doublet collar as shown in the book, the yellow went all round.

The 17th Lancer is shown wearing a hip-length jacket of some sort, whereas they wore the normal lancer tunic but with the blue side fastened over the white plastron, the shape of which was outlined in white piping on the blue. The lancer girdle of yellow with two red stripes was worn, that shown on the drawing being misleading. J. T. Thomson, Edinburgh.

58 Squadron

A COLLEAGUE and I are writing a monograph on 58 Squadron RAF and RFC, and we would very much like to hear from anyone who has any information on the squadron or its aircraft. We would be particularly pleased to receive letters from squadron members who may be able to supply us with serial numbers, etc, of squadron aircraft. All letters sent to the following address will be answered, and any material loaned will be handled carefully before return to the owner.

Malcolm M. Werd, 1 Albany Road, Herrogate, Yorks HG1 4HU.

Camouflaged Bristol Freighter as described in Mr Small's letter.



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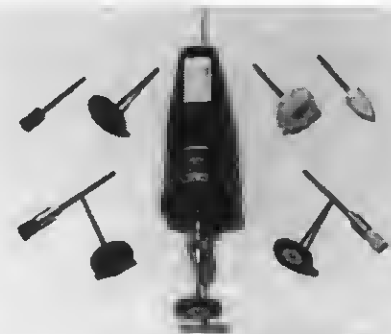
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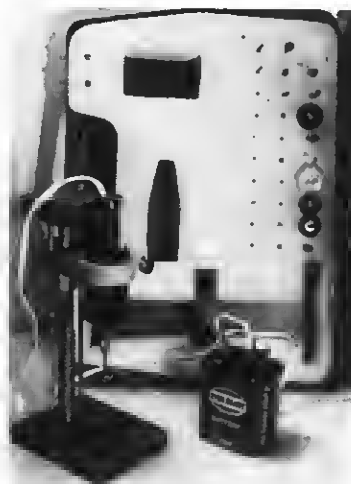
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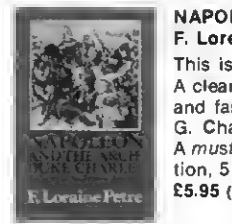
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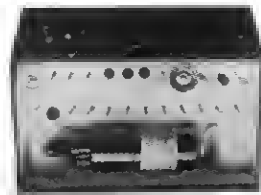
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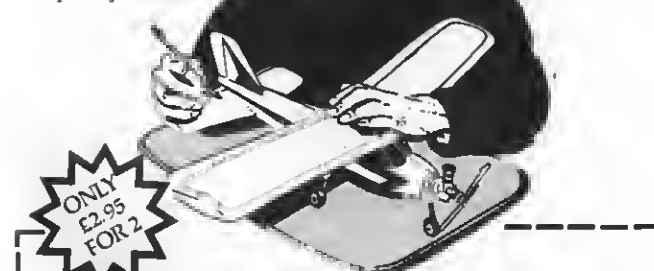
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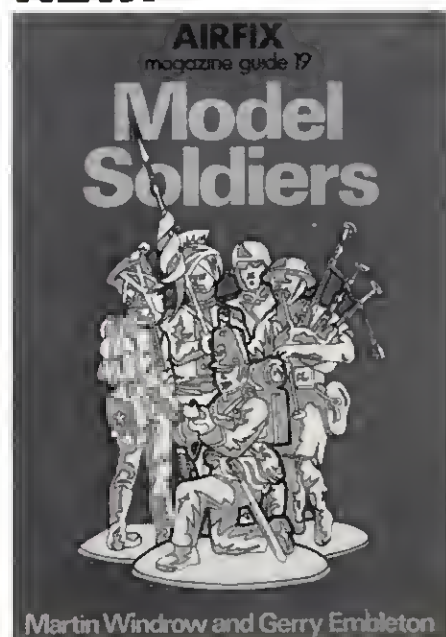
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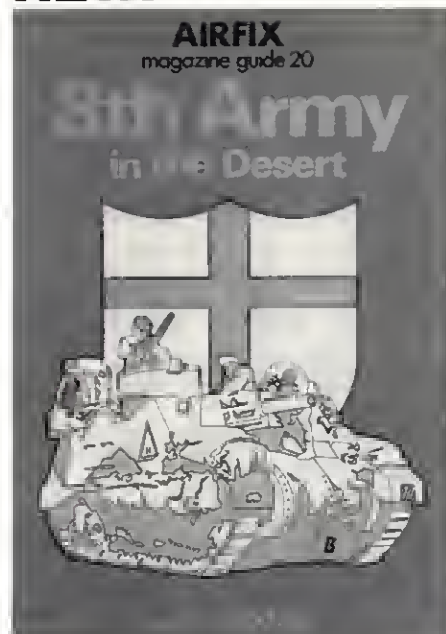
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A11/76

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The models described in the book — all based on Airfix Collectors' Series and Multipose figures — range from an ancient warrior with flying cloak through Napoleonic riflemen to a Bengal lancer and British and German troops of World War 2, providing sufficient diversity to cater for all tastes. Readers of this magazine will already be familiar with Martin and Gerry's work, which is sufficient recommendation for their book! Price is £1.40 net (£1.61 by post direct from the publisher).

8th Army in the Desert is a re-written version of John Sandars' long-running and immensely popular series in this magazine, with dozens of new photographs, and provides a concise but detailed guide to the activities, organisation, vehicles, weapons and uniforms of this famous force. Ideally complementing Bruce Quarrie's earlier title in this series (*No 12: Afrika Korps*), it also contains figure and vehicle modelling hints, maps, diagrams and sketches, making it a useful introduction to any study of the desert war. Price is again £1.40 net, £1.61 by post.

Airfix Magazine Annual for Modellers 6, with a hundred pages, four full-colour features and scale plans on the endpapers is, as we have said before, not only the biggest but also the brightest volume in this popular series.

Contents range from ancient Roman artillery (see opposite) to modern jet aircraft, and include modelling features, with scale plans and photos wherever appropriate, on such topics as: the Highball Mosquito; HMS *Campbeltown* at St Nazaire; a Ford Model T van; German Steyr 640 trucks; 8th Army motorised infantry section; Thames paddle steamer tug; and a French Foreign Legion fort. In addition, there are invaluable reference articles on Luftwaffe fighter heraldry; Britain's Valiant, Victor and Vulcan V-bombers; South African Mirage fighters; Napoleon's Chasseurs a Cheval de la Garde; and much more that we cannot mention here, including the Annual's two regular features, Pick of Photopage and Photo Quiz, compiled from photographs sent in over the years by you, our readers. Price of the Annual is £2.50 net, £2.78 by post.

Any of these three books can be ordered using the coupon below or, if you do not wish to cut your magazine, on a piece of notepaper. If you want to know more about other Airfix and PSL books, please drop us a line, enclosing a SAE and a note of your particular interests, at the address below left.

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